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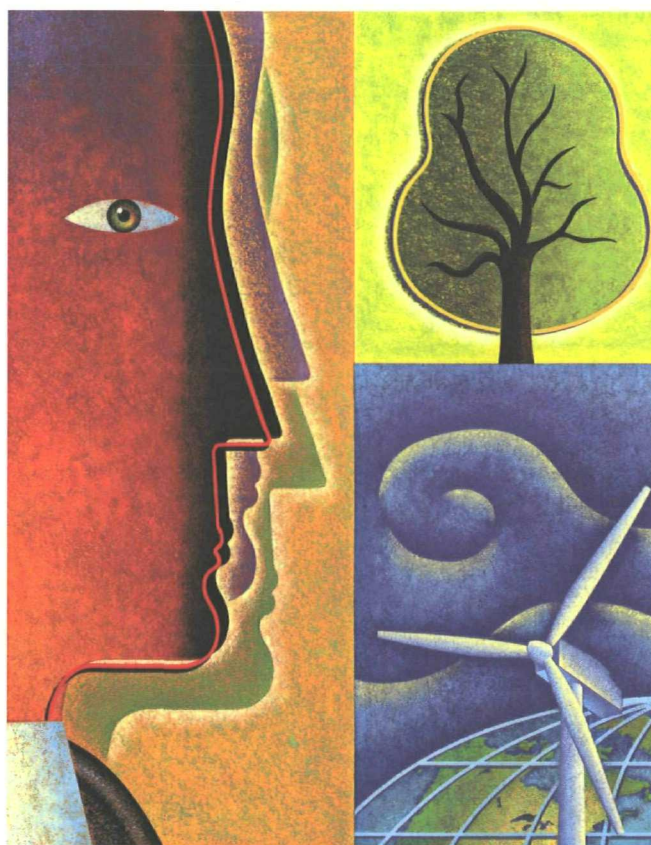


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Emergency Response Plan Documentation Report

12th Street Landfill
Plainwell, Michigan

July 2008





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RMT, Inc. | Weyerhaeuser Company
Final

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Section 1

Introduction

1.1 Background and Scope

The Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (Site) located along 80 miles of the Kalamazoo River in western Michigan has been investigated by the United States Environmental Protection Agency (USEPA), Michigan Department of Environmental Quality (MDEQ), and the Kalamazoo River Study Group (KRSRG). After the site was listed on the National Priorities List in 1990, the MDEQ took the role of the lead agency addressing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) related liability. The KRSRG, a group consisting of current paper mill property owners, conducted a series of investigation activities and completed a Remedial Investigation/Feasibility Study (RI/FS) in 2001 that was not approved by the MDEQ.

In February 2002, the USEPA assumed the role of lead agency for the Site at the request of the MDEQ, and on April 8, 2004, Weyerhaeuser Company (Weyerhaeuser) was identified as a Potentially Responsible Party (PRP) for the Site in a General Notice letter received by Weyerhaeuser and the two remaining KRSRG members, Georgia Pacific and Millennium Holdings, LTD. Concurrently, Weyerhaeuser was negotiating a Consent Decree (CD) with the USEPA to undertake specific activities on the former Plainwell Mill and 12th Street Landfill sites. On February 22, 2005, Weyerhaeuser entered into a CD with the USEPA for the Design and Implementation of Certain Response Activities at the 12th Street Landfill site (Operable Unit No. 4 [OU-4]) and the Plainwell Mill site. A Statement of Work (SOW) for the Remedial Design/Remedial Action (RD/RA) at the 12th Street Landfill site was attached to the CD.

In late February 2007, after several years of negotiations with the KRSRG, the USEPA authorized a Time-Critical Removal Action (TCRA) to remove PCB-contaminated residuals in the former Plainwell Impoundment (a section of Operable Unit No. 5 of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site). This work was to be implemented through an administrative settlement agreement and order on Consent for Removal Action (V-W-07-C-8-63). As part of the TCRA, the earthen section of the Plainwell Dam will be removed and the Kalamazoo River will be rerouted through the former powerhouse channel. This work was to be conducted by the KRSRG over a 2-year period.

Figure 1 identifies the general location of the 12th Street Landfill. As illustrated, the 12th Street Landfill abuts the river and is located directly downstream of the earthen section of the Plainwell Dam. The change in the Kalamazoo River channel will result in an increased river gradient and higher velocities upstream and along the rerouted channel (Rachol, et al., 2005 and Wells, et al., 2003). The modified river flow routing had the potential to flush residuals that remain in the powerhouse channel downstream. Also the increased river gradient and velocity had the potential to erode the eastern toe of the landfill as it

existed prior to the emergency action described in this report. Thus, the TCRA scope of activities can be considered actions or occurrences which threaten releases of Waste Material (as defined in the CD) from the 12th Street Landfill. Since any such release may present an immediate threat to public health or welfare of the environment, Weyerhaeuser was authorized by the USEPA to conduct emergency response actions in conjunction with completing the required work under the CD. Subsequent to that authorization, Weyerhaeuser prepared a Former Powerhouse Channel Emergency Action Design Report that was reviewed, modified, and approved by the USEPA. Supplemental documents including a Multi-Area Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP) were also reviewed, modified, and approved and the Multi-area Health and Safety Plan was submitted and accepted by the USEPA. Copies of the applicable approval letters are included in Appendix A.

1.2 Objectives of the Former Powerhouse Channel Emergency Response

The necessary work to address the threatened release of residuals from the channel was conducted under Section XVII Emergency Response, paragraph 67 of the Weyerhaeuser CD. This Powerhouse Channel Emergency Response Documentation Report describes the actions taken to prevent, abate, and minimize the release of residuals present within the former powerhouse channel adjacent to the 12th Street Landfill and the potential release of waste present on the eastern side of the landfill near the proposed re-routed channel of the Kalamazoo River. Both removal of residuals and the construction of an erosion control system along the river are identified as components of the selected remedy described in the 2002 Record of Decision (ROD) for the 12th Street Landfill (OU-4). However, since the approved schedule for the Plainwell Impoundment TCRA involves re-routing of the main channel of the Kalamazoo River before the 2008 construction season, a modified schedule for implementation of these remedy tasks was necessary and integrated into the Former Powerhouse Channel Emergency Response.

An Emergency Response Design Report was submitted to the USEPA in June 2007 documenting the appropriate actions to prevent, abate, and minimize the release of residuals present within the former powerhouse channel. The USEPA issued a notice to proceed with the emergency action on August 1, 2007, and a conditional approval for the emergency action design plan on August 15, 2007. Clarification on additional comments identified in the conditional approval was submitted, and no additional information was requested by the USEPA.

The specific objectives of the Former Powerhouse Channel Emergency Response included:

- Removal of visual paper residuals from the channel before the main flow of the Kalamazoo River is re-routed.
- Installation of a final erosion protection system along the former powerhouse channel west bank that meets the requirements of the existing ROD.
- Construction of these systems in a manner compatible with the specified landfill closure requirements specified in the 2002 ROD.

1.3 Emergency Action Components of the Selected Remedy

The selected remedial action as identified in the ROD for OU-4 incorporates the following components:

- Excavation and relocation into the landfill footprint of residual PCB contaminated material from adjacent woodlands and wetlands, the neighbor's property, and the sediment in the powerhouse channel.
- Excavation and relocation of the landfill material itself from the east (near the Kalamazoo River) end of the 12th Street Landfill site.
- Creation of a buffer zone to insure that no hydraulic connection exists between PCB-contaminated waste and the Kalamazoo River.
- Appropriate restoration of these areas.
- Construction of a sidewall containment system protective to a 500-year flood elevation.
- Construction of a cover consisting of a venting layer (0.5 feet of sand), 30 mil geomembrane, barrier soil (2 feet), and topsoil (0.5 feet).
- Long-term groundwater monitoring and short-term surface water monitoring.
- Fencing, deed restrictions, and long-term care.
- Evaluation of the need for an active landfill gas extraction system and an active leachate collection and treatment system.

In summary, as a result of the Emergency Action described in this Construction Documentation Report, the following components of the selected remedy for OU-4, have either been fully or partially completed:

- **Excavation and relocation of residuals into the landfill** – Visual residuals in the former powerhouse channel were delineated, excavated, and relocated into the landfill. After the initial analysis of confirmation samples, additional material was removed from three selected areas, followed by a second round of confirmation samples. All visual residual material was removed to natural riverbed material.
 - No further action is needed in the former powerhouse channel.
 - Excavation and relocation of residuals in woodland, wetlands, and the adjacent asphalt plant property will be completed as part of the Remedial Action.
- **Creation of a buffer zone to insure that no hydraulic connection exists between PCB-contaminated waste and the Kalamazoo River** – A clay barrier was installed between the river and the landfill. An additional 20 feet of general fill was placed between the clay barrier and the river as part of the buffer zone.
 - No further action is needed with regards to the buffer zone.
- **Erosion protection and sidewall containment system on the eastern slope of the landfill** – Erosion protection and sidewall containment were installed on the eastern slope of the landfill (adjacent to the river) that are designed to provide protection from a 500-year flood event. The erosion protection extended to a minimum elevation of 707.0 feet mean sea level (M.S.L.). Calculations showed that the Kalamazoo River would rise to approximately elevation 705.5 feet M.S.L. during a 500-year flood event (RMT, 2007c).

- No further action is needed to provide erosion protection and sidewall containment on the riverbank along the eastern slope of the landfill up to the elevation of 703.0 feet M.S.L.
- Additional cover material will be added to the slope as part of the final landfill closure design. The final closure design will include final erosion protection above 703 M.S.L. to the 500-year flood elevation.
- Erosion protection and sidewall containment will be constructed on the remainder of the landfill as part of the Remedial Action.

The remaining components of the ROD will be designed and constructed during the RD/RA efforts for OU-4.

1.4 Documentation Report Organization

In addition to this introductory text, the remaining sections of the Emergency Response Plan Documentation Report present the final description of the Former Powerhouse Channel Emergency Response followed by a series of appendices that back up the emergency action activities performed. The sections and appendices consist of the following:

- Section 2 – Design Basis and Description: A description of the basis of design for elements including delineation of the removal areas, a description of existing conditions, a summary of the hydraulic analysis conducted in support of the erosion protection and slope stability design, and the selection and development of residuals dewatering and drainage equipment and procedures.
- Section 3 – Construction Documentation: A description of activities performed and any changes from the Design Report.
- Section 4 – Construction Monitoring: A description of the various monitoring activities are described, including resuspension monitoring, dewatering system discharge monitoring, residuals removal confirmation, and monitoring of the erosion control system.
- Section 5 – References: Identification of any references cited in this report.
- Appendix A – Relevant Correspondence Associated with the 12th Street Landfill Site
- Appendix B – Photographic Log
- Appendix C – Construction Field Log Summary
- Appendix D – Clay Plug Testing Results
- Appendix E – Spill Report Documentation
- Appendix F – Laboratory Analysis

Section 2

Design Basis and Description

2.1 Overview of the Design Components and Approach

As briefly described in Section 1.3, the Former Powerhouse Channel Emergency Response design components consisted of residuals removal, landfill slope protection, shoreline erosion protection, and re-vegetation of the slope near the river. The design was presented in the approved Emergency Response Plan Design Report for the 12th Street Landfill/Former Powerhouse Channel, dated September 2007. Conditions prior to construction activities at the 12th Street Landfill are shown on Figure 2 and the basis for the design did not change during the construction.

Based on the approved ROD, the 12th Street Landfill Emergency Response incorporated changed conditions associated with the re-routing of the river during the TCRA, the slope and erosion protection designed for the adjacent Michigan Department of Natural Resources (MDNR) property, and the need to integrate the constructed Emergency Response actions into the final remedy. Specific aspects of the Plainwell Impoundment TCRA, the new future river configuration, and existing ROD that were integrated into the erosion control system design are described below.

- **Bank Slope at River's Edge:** The erosion protection system along the east slope of the 12th Street Landfill was integrated with the erosion protection system being installed along the adjacent MDNR property (to the south of 12th Street). Thus, the design specified a 3H:1V slope from river's edge to elevation 703 feet M.S.L. which mimics the adjacent design slope used in the Plainwell Impoundment TCRA.
- **Riprap Integration:** The riprap material sizes along the eastern edge of the 12th Street Landfill were designed to meet the 500-year storm required in the OU-4 ROD, but may be different than that installed at the MDNR property. Thus, the design included a provision to blend the riprap in order to limit abrupt size changes along the water flow path. The riprap extends from the MDNR property to approximately 10 feet north of the landfill footprint.
- **Placement of a Clay Wedge:** The ROD requires creation of a buffer zone to insure that no hydraulic connection exists between PCB-contaminated waste and the Kalamazoo River. The clay "wedge" is 15 feet wide and extends along the entire eastern sideslope, from the base of the landfill (elevation 700 M.S.L.) to 702.5 feet M.S.L.
- **Access Road:** Since the ROD requires on-going groundwater monitoring, a nominally 10-foot wide access road was incorporated into the grading plan along the eastern slope of the landfill to provide a location for final monitoring well construction and access for sampling. The access road is part of the buffer zone between the landfill and the river.
- **Erosion Control Material Types:** Based upon conversations with various agency representatives and review of the Plainwell Impoundment TCRA Design Report, the state agencies prefer use of natural erosion protection where feasible. Therefore, the erosion system consists of a combination of riprap

near the riverbank to an elevation of 703 feet M.S.L. and erosion control matting at higher elevations.

2.2 Individual Design Components

2.2.1 Residuals Removal

The 12th Street Landfill ROD and SOW require excavation and relocation of residuals in the former powerhouse discharge channel that are contiguous with the eastern side of the landfill. Based on the information developed to support the Emergency Action Design, approximately 300 to 500 cubic yards of visually identifiable paper residuals located contiguous to the landfill were initially estimated for removal. Prior to actual excavation, the channel was to be dewatered by isolating targeted excavation areas using portable barriers and then pumping the overlying water from a sump into a secondary retention area created by double silt curtains. Once as much water as possible was removed, as determined by seepage volume and the turbidity of the discharge water, the exposed paper residuals were excavated and loaded into trucks for transfer to a containment area located on the top of the landfill.

2.2.2 Landfill Slope Protection

Section I.1. of the ROD requires that the eastern side of the landfill along the powerhouse channel be excavated and relocated further into the landfill to create a buffer zone to provide hydraulic separation between the landfill contents and the river, and to provide space in which to construct an access road.

Based on modeling results as identified in the Design Report and given the severe implications of slope failure for the eastern slope adjacent to the rerouted Kalamazoo River, a 5H to 1V slope was used for the slope from the access road to the top of landfill.

The design includes installation of a clay plug along the face of the landfill between the river and the landfill to provide a physical separation between possible fill material and the surface water.

2.2.3 Erosion Protection

The ROD requires an erosion protection system to provide protection from a 500-year flood event. The ROD also states that the erosion protection will extend to a minimum elevation of 2 feet above the 100-year flood elevation or to a minimum elevation of 707 feet M.S.L. based upon the current dam in-place scenario. Calculations on flood elevations and sizing of riprap are contained in the Design Report.

Riverbank protection has been developed based upon resistance to the erosion from the rerouted Kalamazoo River through the former powerhouse channel and the impacts of ice and debris. The maximum flow velocity of the 500-year event along the 12th Street Landfill shoreline and landfill sideslope was estimated to be 5.7 feet per second (fps). The riprap erosion protection has also been designed to resist potential ice and debris (*e.g.*, fallen trees) damage. Riverbank protection will be provided by a minimum 2-foot lift (thickness) of specified riprap from the bottom of the river to the elevation of the access road at approximately 703 feet M.S.L. and by a turf reinforcement mat along the sideslope of the landfill, extending from the top of the riprap to elevation 707 feet M.S.L. The turf reinforcement mat will be capable of withstanding river velocities produced by a 500-year flood event (5.7 fps).

2.2.4 Vegetation

All disturbed areas will either be seeded and mulched, or hydro-seeded based on field conditions. Fertilizer will be applied only if needed. The area where the turf reinforcement mat is placed will be hydro-seeded after installation. To help establish a more natural look along the river, willow stalks may be planted along the river's edge within the riprap.

2.2.5 Modifications from Design Report

The following table identifies modifications that varied from the Design Report due to observations during construction activities.

Design Report Specification	As-built Modification	Reason for Variation
Separate containment areas for placement of residual material from channel and additional area for placement of residual material from bank.	Single containment area for residual placement of both channel and bank material.	To maintain access to channel and minimal residual material identified along bank, a single containment pad was determined to be large enough to accept all residual material.
Angular riprap with D ₅₀ of 9" will be used as shoreline protection.	Rounded riprap with D ₅₀ of 9" was used for shoreline protection.	USEPA indicated stakeholders would prefer more natural looking stone. Modeling indicated rounded stone should be sufficient to meet design criteria.
Willow stakes may be planted into the rip rap material.	As of the date of this report, no willows have been planted.	Based on the unknown flow rate, pattern and water elevations after flow is restored to the channel. It was agreed with the USEPA Project Manager that planting of willow stakes or other native vegetation will be covered in the Landfill Closure Design Report.

Section 3

As-Built Construction Documentation

3.1 Overview of Construction Sequencing

The 12th Street Landfill Powerhouse Channel Emergency Response activities were sequenced to meet the streamlined schedule required to coordinate with and not delay Plainwell Impoundment TCRA activities associated with the construction of the nearby water control structure. Work was also expedited when possible to take advantage of favorable weather conditions from August to October 2007.

Photographs taken during construction activities are presented in Appendix B. Construction field logs are summarized in Appendix C.

The specific site activities were also established to schedule subcontractors to the site as needed and thus limit inefficiencies in time and costs. The planned sequence of events was followed closely, with limited deviations from the Design Report. The actual sequence of construction activities is listed in Text Box 3-1 with the construction descriptions presented in Sections 3.2 to 3.6.

3.2 Site Preparation

Construction activities associated with the Emergency Action began on August 6, 2007. Project support areas consisting of temporary trailers, material storage areas, and equipment/vehicle parking areas were established to provide critical support services, such as field engineering, health and safety, construction management, equipment maintenance and refueling, equipment and personnel decontamination, worker sanitation, project area security, and access control. A temporary access road was constructed from the entrance at 12th Street to the top of the landfill using existing site contours thus allowing truck traffic with minimal disturbance to the underlying residual material. The project site plan is shown on Figure 3.

Text Box 3-1 Channel Emergency Response: Activities Sequence

1. Site Preparation
 - Mobilization of equipment
 - Access road construction
 - Clearing and grubbing
 - Containment pad/work platform preparation
2. Residuals Removal
 - Grading eastern slope
 - Portadam placement
 - Dewatering equipment assembly
 - Dewatering and excavation
 - Sampling and re-excavation
 - Confirmation sampling
3. Landfill Slope Protection
 - Buffer zone shaping
 - Access road alignment
 - Clay barrier layer
4. Erosion Protection
 - Final re-shaping
 - Prep for rock
 - Rock placement
 - Enkamat placement
 - Silt fence placement
5. Re-Vegetation
 - Hydroseeding

The next step in site preparation involved clearing and grubbing as required to allow extension of the access road to the channel area, construction of a working area along the channel, and preparation of a pad area for staging excavated residuals and soils. The access haul road was then extended to the base of the landfill and reinforced utilizing crushed stone material as necessary to accommodate loaded trucks.

3.2.1 Clearing and Grubbing

The areas requiring clearing and grubbing included: 1) the entire east bank face of the landfill, which was reshaped as part of the erosion control; 2) an area along the north side of the landfill to allow construction of the haul road; and 3) an area on the northwest top of the landfill approximately 200 feet wide by 200 feet long.

Vegetation, including trees and shrubs, were sheared at the ground surface, chipped, and sent off site to be used as fuel material. Due to the presence of visual residual material within the root system of most of the trees, they were staged on the landfill and then placed in the residuals containment area.

3.2.2 Residual Containment Area

An area designated for placement of the residuals from the powerhouse channel and re-graded east face of the landfill was constructed at the top of the landfill (Figure 3). The containment area was approximately 200 feet wide and 200 feet long. Prior to placing residuals in this area, the existing landfill cover material was graded by pushing out approximately 2 to 3 feet of cover soil to form a containment berm approximately 3 feet wide by 2 feet high along the edges of the containment pad area. Grey residual material was encountered at some locations within 2 feet of the surface. The limited amount of exposed residuals remained within the footprint of the containment pad.

3.2.3 On-Site Wastewater Treatment

An on-site wastewater treatment system consisting of a 20,000-gallon equalization/sedimentation holding tank, followed by bag filters and carbon adsorption columns was mobilized to the site and staged near the top of the landfill as noted on Figure 3. The multimedia filters and carbon columns were trailer-mounted and placed at the east top of slope of the landfill. General specifications of the wastewater treatment system are identified as:

- pump system: two 100-gallon per minute (gpm) variable-frequency drive (vfd) pumps;
- four disposable cloth bag filters; and
- ten 900-pound granular activated carbon filters.

3.3 Residuals Removal

3.3.1 Grading of Eastern Slope of Landfill

In order to access the powerhouse channel with equipment and personnel, the east face of the landfill approximately 35 feet from the riverbank was re-graded to an approximate 5:1 slope. Prior to excavation activities, a silt curtain was placed offshore along the entire length of the landfill to minimize runoff of material into the Kalamazoo River. A bench/access road was rough graded at an approximate elevation of 703 feet M.S.L. from adjacent to the riverbank to the start of the 5:1 slope to allow the excavation equipment access along the entire shoreline (Figure 4). All of the material removed from the eastern face was moved to the top of landfill. Excavated material with visual residuals was placed within the containment pad for later covering. Material with no visual residuals was stockpiled for later use as temporary cover material. The final grading of the bench area and landfill face is further described in Section 3.4.

3.3.2 Portadam Placement/Dewatering

The initial step in removing the residuals within the former powerhouse channel consisted of isolating the area in front of the landfill. A Portadam™ system was installed within the former powerhouse channel to allow dewatering of the area prior to removing visual residuals within the channel. Figure 5 shows the location of the Portadam™ structures within the Kalamazoo River. Deployment of the Portadam™ began by placing steel A-frame stanchions along the downstream end of the channel from the north edge of the landfill face out to the peninsula between the existing main channel and the former powerhouse channel. The upstream stanchions were then installed from the peninsula to the south edge of the landfill. A liner material was then placed along the outside faces of the stanchions. Once the liner was placed and secured with sand bags, dewatering operations began. A sump was placed within the isolated Portadam area consisting of a 6-foot deep concrete manhole dug into the sediment so that the top of the manhole was approximately 1 foot above the sediment surface. A secondary retention area was constructed by placement of double silt curtains adjacent to the isolation area created by the Portadam (see Figure 5). The purpose of the area was to receive the pumped water from the channel sump and provide additional retention time to minimize resuspension of solids into the river. The water was pumped from the sump in the excavation area into an 8' x 22' x 4' metal dispersion unit located within the first silt curtain area. The water was designed to overflow the dispersion unit and flow through the silt curtains. The two silt curtains were placed 3 feet apart to allow access for monitoring turbidity. Based on increased turbidity levels within the containment area, the discharge of the line was modified to flow into a smaller dispersion barrel within the metal container to allow even flow out of the larger unit.

3.3.3 Residuals Removal Operations

The 12th Street Landfill ROD and SOW require excavation and relocation of residuals in the former powerhouse discharge channel that are contiguous with the eastern side of the landfill. Residuals removal operations were accomplished using a long-reach excavator after dewatering of the area. The water within the Portadam enclosure was removed to within 0.5 to 1.5 feet of the sediment surface. Infiltration through the base of the channel required continual pumping to maintain the low water levels. The base of the channel was of sufficient strength for the excavator to move within the channel area. This allowed removal to begin along the east side of the channel moving toward the landfill. Any area with visual residual material was removed and transported to the containment pad at the top of the landfill. Small pockets of gray residual material were encountered randomly throughout the channel. No distinct seams or large areas of residuals were identified.

Once visual residuals were removed, confirmation sampling was performed. Additional excavation was performed in three areas until natural riverbed material was reached (50 additional cubic yards of material). Final confirmation sampling was then performed in the three areas. The sampling program is described in Section 4.3.

A total of approximately 600 cubic yards of material was removed from the channel and placed within the containment pad at the top of the landfill. The soils adjacent to the river were also excavated to allow placement of an erosion control system and clay wedge for hydraulic separation to limit the potential for the river to come in contact with paper residuals from the landfill. Any of the soils excavated from the bank that had visual residual material were also moved to the containment pad. Material removed from the bank with no visual residuals was stockpiled and later used for temporary cover material on the top of the landfill.

3.3.4 Residuals Dewatering and Disposal

Excavated material was drained within the pad area on top of the landfill through gravity drainage. The water accumulated from residuals placed into the residuals containment area was managed via passive filtration and allowed to permeate within the landfill. Temporary erosion controls included earthen berms around the containment area to contain the decant water and accumulated rainfall to effectively limit uncontrolled discharges outside the footprint of the containment pad.

In addition to the residual material, there were approximately 50 drums of investigative derived waste stored on the landfill from a previous USEPA investigation at the Plainwell Mill. These drums were emptied into the containment pad and the drums crushed and buried in an area adjacent to the pad. The pad and drum area was then covered with a minimum of 1 foot of general fill soils.

3.4 Landfill Slope Protection

The buffer zone created along the former powerhouse channel to provide hydraulic separation between the paper residuals and surface water consists of the re-graded slope and the clay wedge that extends approximately 25 feet from the landfill to the Kalamazoo River bank (Figure 4).

This area also includes a horizontal platform, which allows future installation of, and access to, groundwater monitoring wells. The elevation of the working platform was surveyed at approximately 703 feet M.S.L., which will allow for access during normal (elevation 699 to 700 feet M.S.L.) river conditions. To further insure hydraulic separation between the river and residuals within the landfill, four test pits were installed to identify any potential residuals between the clay wedge and the river. One of the test pit areas had visual residuals which were delineated by removal of material in each direction until no residuals were identified. The removed material was transported to the containment pad and replaced with clean fill material.

The clay wedge was installed by excavating a 15-foot wide trench along the entire east face of the landfill approximately 10 feet from the water's edge to an elevation of 700 feet M.S.L. One area near the north end of the trench had a small amount of visual residual material which was delineated by removal of material in each direction until no residuals were identified. Removed material was placed within the containment pad at the top of the landfill. Clay was placed within the trench in 6 to 8-inch lifts and compacted with a vibratory roller up to an elevation of 702.5 feet M.S.L. Compaction testing was performed on each lift. In addition, two in-place core samples were obtained after placement and tested for permeability. Results of the clay wedge testing are attached in Appendix C. While the moisture content of the soils was slightly low during placement, the testing after placement show the material achieved an average permeability of 5.6 E^{-08} . Once the clay was compacted, a 6-inch layer of general fill was placed on top of the clay to allow equipment to install the erosion protection on the surface without damaging the clay layer.

3.5 Erosion Protection

Riverbank protection included the regrading of the shoreline to a 3:1 slope and placement of an 8-ounce nonwoven geotextile fabric prior to placement of stone riprap. The fabric was anchored at the top by excavating a 2-foot deep trench, placing the fabric in the trench and compacting general fill material to existing grade. A key trench was installed at the toe of the riverbank to protect against bank undercutting. A cross section of the shoreline is depicted on Figure 4. The backup information for this riprap design is contained in the Design Report.

After discussions with the USEPA, it was determined that a natural river run stone would be more aesthetically consistent with surrounding properties than a quarry type product. Model results indicated this material would exhibit similar erosion protection to the quarry stone. The minimum 2-foot thick layer of riprap material (D_{50} of 9 inches) was placed in two lifts at an approximate 3:1 slope from an

elevation of 697 feet M.S.L. to 703.5 feet M.S.L. and compacted into the fabric using the bucket of the backhoe. A silt fence was installed at the edge of the riprap to control any soil runoff from the face of the landfill from entering the river. Additional erosion protection started at the edge of the riprap from elevation 703.0 feet M.S.L. across the access road and up the sideslope to elevation 707 feet M.S.L. The erosion protection system above elevation 703 feet M.S.L. consisted of placing 6 inches of general fill material followed by 6 inches of topsoil. The topsoil was then covered by Enkamat™ which is a three-dimensional nylon turf reinforcement mat made of nylon filaments joined at the intersections. This open weave matting design supplements natural soil stability by reinforcing the plant roots. The Enkamat was then hydroseeded to promote faster vegetative growth on the matting.

3.6 Vegetation

The final grading of the landfill face was not completed until early October 2007 and the temperatures had dropped to the point that the landscaping contractor indicated seeding would not be feasible. The area above the hydroseeded Enkamat was subsequently seeded in early April 2008. A second silt fence was also added in early April 2008 at the top of the slope to minimize erosion of the face of the landfill until further vegetation fills in beginning in Spring 2008.

The Design Report discussed the option of planting willow stakes within the rip rap along the shoreline. The potential for planting of willow stakes was deferred during construction, since the root system may not have been strong enough to withstand the flows from opening up the channel flow. Further, proper growth conditions for willows may require penetrate of the geofabric installed under the rip rap material. Based on discussions with the USEPA in June 2008 it was determined that any additional vegetation needs, including potential planting of willows, will be considered as part of the final landfill design plan.

Section 4

Construction Monitoring

4.1 Resuspension Monitoring

As described in the Emergency Response Plan Design Report, the design of the excavation actions was developed to minimize potential adverse effects from this excavation work by completing the residual removal activities and bank re-grading prior to re-routing the river channel. An additional safeguard was to implement a resuspension monitoring program that provided real time water quality data for use in assessing a need for operational changes that minimize any unintended secondary effects.

The approach integrated into the resuspension monitoring and control plan was to compare turbidity data collected upstream and downstream of the former powerhouse channel as a mechanism to track the impacts of the excavation activities on water quality.

Two movable YSI Sonde units, each equipped with probes to measure dissolved oxygen, turbidity, pH, conductivity, and temperature were installed within the Kalamazoo River, approximately 200' upstream and downstream of the excavation area as shown on Figure 5. The approach was to compare turbidity data collected upstream and downstream of the work zone along the former powerhouse channel as a mechanism to track the potential impacts of the excavation activities on water quality. The turbidity data were also supplemented by weekly PCB analyses and daily visual inspections of the water barriers associated with the residuals isolation area.

The water quality control performance criteria to trigger corrective responses were a consistently visible plume or reproducible turbidity readings at the downstream station that were 2 times the background water quality. Background readings taken from August 22 to 24, 2007, had levels of 16 to 18 NTUs. However, at start of construction, background turbidities had fallen and ranged from 2 to 4 NTUs. Periodically during the excavation activities, downstream levels exceeding twice the upstream level were identified. As turbidity increases were identified, modifications to construction operations were performed which included shutting down or decreasing pump volume, reconfiguring the roll off box with additional dissipation for more uniform flow out of the box, and adding an additional silt curtain adjacent to the roll off box to assist in capturing resuspended sediment. Both a tabular summary (Table 1) of turbidity data and a graphical representation (Figures 6-1 to 6-3) are attached. The table identifies actions taken subsequent to any identified exceedance. Bi-weekly progress reports submitted to the USEPA during construction activities included this data.

The design report also indicated that surface water samples were to be collected weekly during construction activities. As a protective measure, samples were collected the first 2 days of construction

and weekly thereafter (three total samples) in accordance with the procedures outlined in the FSP for the site. The surface water analytical results are summarized in Table 2. Samples were analyzed for PCBs. No PCB arochlors were identified above the method detection limits of 0.20 ug/L.

A release of biodegradable hydraulic oil occurred sometime during the night of September 10, 2007, when one of the seals within the submersible pump began to leak. The pump was shut down as soon as the problem was identified. Based on the fluid within the reservoir, approximately 2 to 3 gallons of the material was released. The majority of fluid was contained within the secondary containment area and absorbent pads were used to remove as much of the residual fluid as possible. A new pump was delivered to the site and placed within the channel area and the defective pump removed from the site. The release was reported to the National Response Center and a copy of the report is attached as Appendix E.

4.2 Wastewater Treatment System Discharge Monitoring

The on-site wastewater treatment system was designed to treat water generated by dewatering of the residual material exceeding the capacity of the sump area and containment berms. Based on limited accumulation of water from the water content of the material removed from the channel and local rainfall, the containment pad was of sufficient size that the wastewater treatment system was not utilized.

4.3 Residuals Excavation Documentation Sampling

As required in the 12th Street Landfill ROD, visible contiguous residuals were removed from the excavation area in the former powerhouse channel. All visual residuals were removed. In addition to the visual assessment, surface sediment sampling was also performed to document post excavation PCB surface concentrations remaining in the powerhouse channel. Documentation sampling was conducted in a manner similar to the confirmation sampling being conducted under the Plainwell Impoundment TCRA. A grid was established across the excavation area to facilitate the collection of a representative group of samples. Six sections from the grid were randomly selected for sampling using a random number generator.

Six initial samples along with two duplicates were collected on September 10, 2007, in accordance with the sampling plan presented in the Design Report. Samples were submitted to Weyerhaeuser Analysis and Testing Services (WATS) for PCB analysis. The results identified four samples (S1, S2, S3, and S6) with results greater than 1 ppm. None of the samples exhibited visual residuals. The area around Sample S3 was 1 foot below natural riverbed material with no visual residual material; therefore, no additional excavation was performed in this area. Samples S1, S2, and S6 appeared to be a mixture of natural river bed and apparent depositional material. Therefore, approximately 500 to 600 square feet around each of these samples had an additional 6 to 12 inches of material removed. The three areas were then resampled, and the samples were submitted for PCB analysis. Final sample results and excavation areas are shown

on Figure 7. Sample results are summarized in Table 3. Laboratory analytical data are attached in Appendix F.

4.4 Erosion Control and Vegetation Monitoring

Erosion control monitoring began after completion of construction activities and will continue in accordance with the Design Report. Inspection will include visual observations of the erosion protection system including riprap and matting system, as well as evaluation of seeded and planted vegetation. Based on observations in late March 2008, there were some areas on the northern face of the landfill that were being washed down during heavy rain onto the flat access area towards the river. To alleviate this problem, an additional silt fence was installed at the top of the north face to capture some of the sheet flow of water from the landfill. Based on visual observations since that time, it appears that the additional silt fence is minimizing erosion along the face of the landfill. Monitoring of the restored bank areas for signs of erosion or bank failure will be performed semi-annually until the long-term operation and maintenance plan is implemented per the closure requirements for the 12th Street Landfill.

Section 5

References

Rachol, et al., 2005

Wells, et al., 2003

Plainwell Emergency Response Design Report



Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
8/22/2007	11:00 AM	12:00 PM	14.20	16.00	28.40	Background monitoring data collected prior to start of in water activities. The average turbidity readings during this period were 16.0 NTU upstream and 17.7 NTU downstream.
	12:00 PM	1:00 PM	14.83	16.73	29.65	
	1:00 PM	2:00 PM	14.50	16.83	29.00	
	2:00 PM	3:00 PM	15.65	17.38	31.30	
	3:00 PM	4:00 PM	17.50	18.45	35.00	
	4:00 PM	5:00 PM	16.60	19.35	33.20	
	5:00 PM	6:00 PM	19.15	18.30	38.30	
	6:00 PM	7:00 PM	17.93	19.10	35.85	
	7:00 PM	8:00 PM	18.00	18.40	36.00	
	8:00 PM	9:00 PM	19.30	19.30	38.60	
	9:00 PM	10:00 PM	19.13	20.58	38.25	
	10:00 PM	11:00 PM	19.48	21.63	38.95	
	11:00 PM	12:00 AM	19.20	21.38	38.40	
8/23/2007	12:00 AM	1:00 AM	19.43	21.53	38.85	
	1:00 AM	2:00 AM	18.75	20.65	37.50	
	2:00 AM	3:00 AM	18.68	19.98	37.35	
	3:00 AM	4:00 AM	19.20	18.70	38.40	
	4:00 AM	5:00 AM	19.55	18.15	39.10	
	5:00 AM	6:00 AM	15.77	18.10	31.53	
	6:00 AM	7:00 AM	15.83	17.70	31.65	
	7:00 AM	8:00 AM	16.30	18.00	32.60	
	8:00 AM	9:00 AM	16.60	17.73	33.20	
	9:00 AM	10:00 AM	16.23	17.40	32.45	
	10:00 AM	11:00 AM	15.90	17.95	31.80	
	11:00 AM	12:00 PM	15.03	18.05	30.05	
	12:00 PM	1:00 PM	14.18	16.68	28.35	
	1:00 PM	2:00 PM	13.85	16.33	27.70	
	2:00 PM	3:00 PM	14.90	16.45	29.80	
	3:00 PM	4:00 PM	14.65	17.83	29.30	
	4:00 PM	5:00 PM	14.88	15.88	29.75	
	5:00 PM	6:00 PM	13.70	16.55	27.40	
	6:00 PM	7:00 PM	14.48	15.63	28.95	
	7:00 PM	8:00 PM	13.68	15.98	27.35	
	8:00 PM	9:00 PM	13.30	15.25	26.60	
	9:00 PM	10:00 PM	12.50	14.70	25.00	
	10:00 PM	11:00 PM	13.05	14.53	26.10	
	11:00 PM	12:00 AM	13.13	15.15	26.25	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
8/24/2007	12:00 AM	1:00 AM	13.48	15.55	26.95	
	1:00 AM	2:00 AM	13.70	15.48	27.40	
	2:00 AM	3:00 AM	14.20	15.75	28.40	
	3:00 AM	4:00 AM	14.38	15.88	28.75	
	4:00 AM	5:00 AM	15.00	16.40	30.00	
	5:00 AM	6:00 AM	16.30	17.25	32.60	
	6:00 AM	7:00 AM	16.90	18.63	33.80	
	7:00 AM	8:00 AM	17.20	19.08	34.40	
	8:00 AM	9:00 AM	17.55	19.38	35.10	
	9:00 AM	10:00 AM	17.43	19.43	34.85	
9/5/2007	12:00 PM	1:00 PM	4.60	0.85	9.20	
	1:00 PM	2:00 PM	5.18	1.40	10.35	
	2:00 PM	3:00 PM	4.60	2.83	9.20	
	3:00 PM	4:00 PM	3.48	1.45	6.95	
	4:00 PM	5:00 PM	2.93	0.40	5.85	
	5:00 PM	6:00 PM	2.25	0.00	4.50	
	6:00 PM	7:00 PM	2.13	0.00	4.25	
	7:00 PM	8:00 PM	1.90	0.00	3.80	
	8:00 PM	9:00 PM	2.00	0.00	4.00	
	9:00 PM	10:00 PM	2.43	0.00	4.85	
	10:00 PM	11:00 PM	2.80	0.00	5.60	
	11:00 PM	12:00 AM	3.13	0.00	6.25	
9/6/2007	12:00 AM	1:00 AM	3.08	0.00	6.15	
	1:00 AM	2:00 AM	2.98	0.00	5.95	
	2:00 AM	3:00 AM	3.05	0.00	6.10	
	3:00 AM	4:00 AM	2.95	0.03	5.90	
	4:00 AM	5:00 AM	3.50	0.00	7.00	
	5:00 AM	6:00 AM	2.88	0.00	5.75	
	6:00 AM	7:00 AM	3.10	0.00	6.20	
	7:00 AM	8:00 AM	3.33	0.48	6.65	
	8:00 AM	9:00 AM	2.43	0.00	4.85	
	9:00 AM	10:00 AM	2.03	0.00	4.05	
	10:00 AM	11:00 AM	1.63	0.00	3.25	Begin slow pumping to seat silt curtains
	11:00 AM	12:00 PM	1.25	0.00	2.50	
	12:00 PM	1:00 PM	1.15	0.00	2.30	
	1:00 PM	2:00 PM	0.70	0.00	1.40	
	2:00 PM	3:00 PM	0.63	0.00	1.25	Begin pumping to dewater at approximately 2,000 gpm
	3:00 PM	4:00 PM	1.15	1.93	2.30	
	4:00 PM	5:00 PM	1.13	0.00	2.25	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
	5:00 PM	6:00 PM	0.53	0.00	1.05	
	6:00 PM	7:00 PM	0.35	0.00	0.70	
	7:00 PM	8:00 PM	0.38	0.00	0.75	
	8:00 PM	9:00 PM	0.58	0.00	1.15	
	9:00 PM	10:00 PM	0.90	0.00	1.80	
	10:00 PM	11:00 PM	1.25	0.00	2.50	
	11:00 PM	12:00 AM	1.50	0.00	3.00	
9/7/2007	12:00 AM	1:00 AM	1.78	0.00	3.55	
	1:00 AM	2:00 AM	2.03	0.00	4.05	
	2:00 AM	3:00 AM	2.03	0.00	4.05	
	3:00 AM	4:00 AM	2.30	0.00	4.60	
	4:00 AM	5:00 AM	2.30	0.00	4.60	
	5:00 AM	6:00 AM	2.43	0.00	4.85	
	6:00 AM	7:00 AM	2.53	0.00	5.05	
	7:00 AM	8:00 AM	2.58	0.40	5.15	Area pumped down begin to see turbidity within curtained area. Begin sediment removal from river.
	8:00 AM	9:00 AM	1.98	10.73	3.95	
	9:00 AM	10:00 AM	1.38	3.73	2.75	Shut down pump.
	10:00 AM	11:00 AM	1.70	4.15	3.40	Modify secondary containment area and level discharge dispersion structure. Increase in turbidity from working within containment area;
	11:00 AM	12:00 PM	1.80	5.13	3.60	
	12:00 PM	1:00 PM	1.58	11.40	3.15	
	1:00 PM	2:00 PM	1.75	0.18	3.50	
	2:00 PM	3:00 PM	4.53	0.73	9.05	
	3:00 PM	4:00 PM	3.48	4.30	6.95	
	4:00 PM	5:00 PM	2.15	4.35	4.30	Restart pump to maintain water level.
	5:00 PM	6:00 PM	1.78	3.43	3.55	
	6:00 PM	7:00 PM	3.13	3.50	6.25	
	7:00 PM	8:00 PM	2.50	3.80	5.00	
	8:00 PM	9:00 PM	2.30	3.35	4.60	
	9:00 PM	10:00 PM	2.70	3.30	5.40	
	10:00 PM	11:00 PM	3.33	3.73	6.65	
	11:00 PM	12:00 AM	3.63	4.00	7.25	
	12:00 AM	1:00 AM	3.83	4.28	7.65	
	1:00 AM	2:00 AM	3.90	4.63	7.80	
	2:00 AM	3:00 AM	4.13	4.75	8.25	
	3:00 AM	4:00 AM	4.10	4.95	8.20	
	4:00 AM	5:00 AM	4.40	4.98	8.80	
	5:00 AM	6:00 AM	4.30	4.83	8.60	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
9/8/2007	6:00 AM	7:00 AM	4.43	11.40	8.85	Resume pumping at 2,000 gpm. Continure removal of sediment when the water is low.
	7:00 AM	8:00 AM	4.25	7.78	8.50	Pump level closer to sediment surface interface; beginning to create turbidity within silt curtain.
	8:00 AM	9:00 AM	3.80	6.85	7.60	
	9:00 AM	10:00 AM	3.15	11.95	6.30	Shut down pump at 9:20 am.
	10:00 AM	11:00 AM	2.78	9.05	5.55	Work on containment area to move curtains further from discharge
	11:00 AM	12:00 PM	2.50	9.50	5.00	
	12:00 PM	1:00 PM	2.85	5.23	5.70	
	1:00 PM	2:00 PM	1.78	10.38	3.55	Shut down pump.
	2:00 PM	3:00 PM	2.58	2.98	5.15	Clean out discharge dispersion structure. Add a drum to the end of the discharge to allow more uniform flow
	3:00 PM	4:00 PM	2.13	5.48	4.25	
	4:00 PM	5:00 PM	1.48	3.80	2.95	
	5:00 PM	6:00 PM	1.23	6.95	2.45	Shut down pump at 5:30 pm.
	6:00 PM	7:00 PM	1.33	2.75	2.65	
	7:00 PM	8:00 PM	1.68	5.10	3.35	
	8:00 PM	9:00 PM	6.33	4.20	12.65	
	9:00 PM	10:00 PM	3.83	4.70	7.65	
	10:00 PM	11:00 PM	4.68	5.55	9.35	
	11:00 PM	12:00 AM	5.30	6.18	10.60	
9/9/2007	12:00 AM	1:00 AM	5.88	6.95	11.75	
	1:00 AM	2:00 AM	6.35	7.45	12.70	
	2:00 AM	3:00 AM	6.80	7.93	13.60	
	3:00 AM	4:00 AM	7.03	8.40	14.05	
	4:00 AM	5:00 AM	7.58	8.65	15.15	
	5:00 AM	6:00 AM	8.08	8.95	16.15	
	6:00 AM	7:00 AM	8.13	9.10	16.25	Water up approximately 1 foot since yesterday.
	7:00 AM	8:00 AM	8.15	9.20	16.30	Shutdown pump and move intake.
	8:00 AM	9:00 AM	7.23	9.53	14.45	
	9:00 AM	10:00 AM	6.28	8.03	12.55	Restart pump @ 9:15. High turbidity observed within silt curtain Continue removal of sediment when water is low.
	10:00 AM	11:00 AM	5.88	15.40	11.75	Shut down pump, clean out cluvert and reset the pump.
	11:00 AM	12:00 PM	5.48	9.75	10.95	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
	12:00 PM	1:00 PM	4.78	7.93	9.55	Restart pump. Initially turbid within silt curtain but clearing quickly.
	1:00 PM	2:00 PM	4.23	11.23	8.45	
	2:00 PM	3:00 PM	3.80	4.88	7.60	Shut down pump at 2:00 pm. Sediment removal completed awaiting results of sediment samples.
9/11/2008	2:00 PM	3:00 PM	4.55	6.13	9.10	
	3:00 PM	4:00 PM	4.63	4.43	9.25	
	4:00 PM	5:00 PM	5.98	5.50	11.95	
	5:00 PM	6:00 PM	8.45	8.15	16.90	
	6:00 PM	7:00 PM	6.90	6.73	13.80	
	7:00 PM	8:00 PM	5.18	5.20	10.35	
	8:00 PM	9:00 PM	4.88	4.88	9.75	
	9:00 PM	10:00 PM	6.08	5.78	12.15	
	10:00 PM	11:00 PM	6.85	6.60	13.70	
9/12/2008	11:00 PM	12:00 AM	7.45	7.10	14.90	
	12:00 AM	1:00 AM	8.40	7.65	16.80	
	1:00 AM	2:00 AM	8.03	7.80	16.05	
	2:00 AM	3:00 AM	8.53	8.28	17.05	
	3:00 AM	4:00 AM	8.38	8.30	16.75	
	4:00 AM	5:00 AM	8.55	8.53	17.10	
	5:00 AM	6:00 AM	8.78	8.78	17.55	
	6:00 AM	7:00 AM	9.30	9.25	18.60	
	7:00 AM	8:00 AM	9.50	9.43	19.00	
	8:00 AM	9:00 AM	9.20	9.43	18.40	
	9:00 AM	10:00 AM	9.50	9.43	19.00	
	10:00 AM	11:00 AM	8.65	8.45	17.30	
	11:00 AM	12:00 PM	7.95	8.28	15.90	
	12:00 PM	1:00 PM	7.85	7.93	15.70	
	1:00 PM	2:00 PM	6.75	6.93	13.50	
	2:00 PM	3:00 PM	6.65	6.68	13.30	
	3:00 PM	4:00 PM	6.88	6.93	13.75	
	4:00 PM	5:00 PM	11.18	12.63	22.35	
	5:00 PM	6:00 PM	7.58	8.53	15.15	
	6:00 PM	7:00 PM	8.18	7.45	16.35	
	7:00 PM	8:00 PM	23.38	23.03	46.75	
	8:00 PM	9:00 PM	10.85	11.63	21.70	
	9:00 PM	10:00 PM	9.68	10.00	19.35	
	10:00 PM	11:00 PM	11.70	10.93	23.40	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
	11:00 PM	12:00 AM	11.63	11.78	23.25	
9/13/2008	12:00 AM	1:00 AM	12.08	12.30	24.15	
	1:00 AM	2:00 AM	12.60	12.78	25.20	
	2:00 AM	3:00 AM	13.13	12.85	26.25	
	3:00 AM	4:00 AM	13.35	13.50	26.70	
	4:00 AM	5:00 AM	13.73	13.90	27.45	
	5:00 AM	6:00 AM	13.13	13.45	26.25	
	6:00 AM	7:00 AM	14.60	13.23	29.20	
	7:00 AM	8:00 AM	14.65	14.03	29.30	Resumed sediment removal.
	8:00 AM	9:00 AM	14.00	13.45	28.00	
	9:00 AM	10:00 AM	14.45	12.85	28.90	
	10:00 AM	11:00 AM	13.95	12.28	27.90	
	11:00 AM	12:00 PM	12.75	11.95	25.50	
	12:00 PM	1:00 PM	12.73	11.70	25.45	
	1:00 PM	2:00 PM	10.98	9.80	21.95	
	2:00 PM	3:00 PM	12.23	10.40	24.45	
	3:00 PM	4:00 PM	10.88	20.93	21.75	Completed sediment removal, collected samples, removed pump and manhole cover.
	4:00 PM	5:00 PM	9.43	11.15	18.85	
	5:00 PM	6:00 PM	8.88	7.15	17.75	
	6:00 PM	7:00 PM	8.35	7.48	16.70	
	7:00 PM	8:00 PM	7.43	6.83	14.85	
	8:00 PM	9:00 PM	7.33	7.33	14.65	
	9:00 PM	10:00 PM	6.88	6.88	13.75	
	10:00 PM	11:00 PM	7.33	7.18	14.65	
	11:00 PM	12:00 AM	7.58	7.15	15.15	
9/14/2008	12:00 AM	1:00 AM	8.35	7.10	16.70	
	1:00 AM	2:00 AM	7.83	7.28	15.65	
	2:00 AM	3:00 AM	7.80	7.48	15.60	
	3:00 AM	4:00 AM	7.20	7.28	14.40	
	4:00 AM	5:00 AM	7.18	7.20	14.35	
	5:00 AM	6:00 AM	7.18	7.15	14.35	
	6:00 AM	7:00 AM	7.33	7.13	14.65	
	7:00 AM	8:00 AM	7.18	7.35	14.35	Construction crew demobilized from the site. No activities or personnel on site for the weekend.
	8:00 AM	9:00 AM	7.05	7.13	14.10	
	9:00 AM	10:00 AM	6.73	6.73	13.45	
	10:00 AM	11:00 AM	9.25	8.20	18.50	
	11:00 AM	12:00 PM	5.93	6.30	11.85	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
	12:00 PM	1:00 PM	5.78	5.70	11.55	
	1:00 PM	2:00 PM	5.28	5.43	10.55	
	2:00 PM	3:00 PM	5.95	6.13	11.90	
	3:00 PM	4:00 PM	8.60	8.40	17.20	
	4:00 PM	5:00 PM	5.90	6.25	11.80	
	5:00 PM	6:00 PM	4.88	5.03	9.75	
	6:00 PM	7:00 PM	4.28	4.08	8.55	
	7:00 PM	8:00 PM	4.25	4.00	8.50	
	8:00 PM	9:00 PM	4.73	4.45	9.45	
	9:00 PM	10:00 PM	4.00	3.85	8.00	
	10:00 PM	11:00 PM	4.13	4.15	8.25	
	11:00 PM	12:00 AM	4.30	4.38	8.60	
9/15/2008	12:00 AM	1:00 AM	4.70	4.30	9.40	
	1:00 AM	2:00 AM	4.75	4.55	9.50	
	2:00 AM	3:00 AM	4.53	4.48	9.05	
	3:00 AM	4:00 AM	4.78	4.40	9.55	
	4:00 AM	5:00 AM	4.75	4.48	9.50	
	5:00 AM	6:00 AM	4.40	4.20	8.80	
	6:00 AM	7:00 AM	4.45	4.25	8.90	
	7:00 AM	8:00 AM	4.20	4.08	8.40	
	8:00 AM	9:00 AM	3.95	3.80	7.90	
	9:00 AM	10:00 AM	3.80	3.75	7.60	
	10:00 AM	11:00 AM	3.63	3.58	7.25	
	11:00 AM	12:00 PM	3.83	3.65	7.65	
	12:00 PM	1:00 PM	4.48	4.50	8.95	
	1:00 PM	2:00 PM	3.05	2.90	6.10	
	2:00 PM	3:00 PM	2.80	2.55	5.60	
	3:00 PM	4:00 PM	4.13	3.68	8.25	
	4:00 PM	5:00 PM	5.28	13.40	10.55	
	5:00 PM	6:00 PM	6.95	6.45	13.90	
	6:00 PM	7:00 PM	5.58	17.43	11.15	
	7:00 PM	8:00 PM	3.78	2.95	7.55	
	8:00 PM	9:00 PM	6.60	2.53	13.20	
	9:00 PM	10:00 PM	2.83	2.80	5.65	
	10:00 PM	11:00 PM	3.08	2.98	6.15	
	11:00 PM	12:00 AM	3.50	3.53	7.00	
	12:00 AM	1:00 AM	3.98	3.73	7.95	
	1:00 AM	2:00 AM	4.23	3.88	8.45	
	2:00 AM	3:00 AM	4.45	3.98	8.90	
	3:00 AM	4:00 AM	4.23	4.13	8.45	
	4:00 AM	5:00 AM	4.20	3.98	8.40	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
9/16/2008	5:00 AM	6:00 AM	4.18	4.00	8.35	
	6:00 AM	7:00 AM	4.13	4.13	8.25	
	7:00 AM	8:00 AM	3.95	3.83	7.90	
	8:00 AM	9:00 AM	3.50	3.53	7.00	
	9:00 AM	10:00 AM	3.18	3.08	6.35	
	10:00 AM	11:00 AM	3.00	2.73	6.00	
	11:00 AM	12:00 PM	2.90	2.98	5.80	
	12:00 PM	1:00 PM	17.70	2.75	35.40	
	1:00 PM	2:00 PM	11.95	2.68	23.90	
	2:00 PM	3:00 PM	4.50	2.73	9.00	
	3:00 PM	4:00 PM	17.30	2.40	34.60	
	4:00 PM	5:00 PM	15.83	2.38	31.65	
	5:00 PM	6:00 PM	2.33	2.00	4.65	
	6:00 PM	7:00 PM	1.90	1.95	3.80	
	7:00 PM	8:00 PM	1.75	1.68	3.50	
	8:00 PM	9:00 PM	1.68	1.58	3.35	
	9:00 PM	10:00 PM	1.60	1.50	3.20	
	10:00 PM	11:00 PM	1.63	1.48	3.25	
	11:00 PM	12:00 AM	1.63	1.43	3.25	
9/17/2008	12:00 AM	1:00 AM	1.65	1.55	3.30	
	1:00 AM	2:00 AM	1.50	1.43	3.00	
	2:00 AM	3:00 AM	1.60	1.25	3.20	
	3:00 AM	4:00 AM	1.48	1.30	2.95	
	4:00 AM	5:00 AM	1.43	1.23	2.85	
	5:00 AM	6:00 AM	1.38	1.15	2.75	
	6:00 AM	7:00 AM	1.38	1.25	2.75	
	7:00 AM	8:00 AM	1.47	1.13	2.93	Construction crew mobilized to the site. Began removing portadams around the sediment removal area.
	8:00 AM	9:00 AM	1.20	2.00	2.40	
	9:00 AM	10:00 AM	1.13	1.28	2.25	
	10:00 AM	11:00 AM	1.63	1.58	3.25	
	11:00 AM	12:00 PM	1.45	2.43	2.90	
	12:00 PM	1:00 PM	4.10	8.55	8.20	
	1:00 PM	2:00 PM	6.00	9.68	12.00	
	2:00 PM	3:00 PM	3.73	7.28	7.45	
	3:00 PM	4:00 PM	10.45	11.78	20.90	
	4:00 PM	5:00 PM	6.35	7.68	12.70	
	5:00 PM	6:00 PM	3.90	4.38	7.80	
	6:00 PM	7:00 PM	3.55	3.85	7.10	
	7:00 PM	8:00 PM	3.68	3.93	7.35	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
	8:00 PM	9:00 PM	2.73	3.20	5.45	
	9:00 PM	10:00 PM	2.73	2.85	5.45	
	10:00 PM	11:00 PM	2.80	2.80	5.60	
	11:00 PM	12:00 AM	2.88	2.90	5.75	
9/18/2008	12:00 AM	1:00 AM	2.80	2.90	5.60	
	1:00 AM	2:00 AM	4.05	2.70	8.10	
	2:00 AM	3:00 AM	2.73	2.78	5.45	
	3:00 AM	4:00 AM	2.70	2.68	5.40	
	4:00 AM	5:00 AM	2.70	2.68	5.40	
	5:00 AM	6:00 AM	2.70	3.03	5.40	
	6:00 AM	7:00 AM	2.68	2.73	5.35	
	7:00 AM	8:00 AM	2.68	2.70	5.35	Continue removal of portadam structures.
	8:00 AM	9:00 AM	2.55	2.43	5.10	
	9:00 AM	10:00 AM	2.60	2.40	5.20	
	10:00 AM	11:00 AM	3.20	3.20	6.40	
	11:00 AM	12:00 PM	2.85	4.10	5.70	
	12:00 PM	1:00 PM	2.30	3.65	4.60	
	1:00 PM	2:00 PM	1.80	5.15	3.60	
	2:00 PM	3:00 PM	1.60	1.85	3.20	
	3:00 PM	4:00 PM	1.75	2.03	3.50	
	4:00 PM	5:00 PM	2.63	2.48	5.25	Completed removal of portadam structures. This completed in-river activities at the site.
	5:00 PM	6:00 PM	2.40	2.68	4.80	
	6:00 PM	7:00 PM	2.23	2.73	4.45	
	7:00 PM	8:00 PM	2.15	2.53	4.30	
	8:00 PM	9:00 PM	2.93	3.13	5.85	
	9:00 PM	10:00 PM	3.93	4.33	7.85	
	10:00 PM	11:00 PM	4.80	5.13	9.60	
	11:00 PM	12:00 AM	5.10	5.70	10.20	
	12:00 AM	1:00 AM	5.48	6.20	10.95	
	1:00 AM	2:00 AM	5.63	6.78	11.25	
	2:00 AM	3:00 AM	6.05	7.10	12.10	
	3:00 AM	4:00 AM	6.20	7.50	12.40	
	4:00 AM	5:00 AM	6.48	7.28	12.95	
	5:00 AM	6:00 AM	6.50	7.75	13.00	
	6:00 AM	7:00 AM	6.55	7.40	13.10	
	7:00 AM	8:00 AM	6.55	7.53	13.10	Placed silt curtain along the banks prior to starting excavation for the "clay plug" installation

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
9/19/2008	8:00 AM	9:00 AM	6.43	7.13	12.85	
	9:00 AM	10:00 AM	5.73	6.75	11.45	
	10:00 AM	11:00 AM	5.28	5.80	10.55	
	11:00 AM	12:00 PM	5.23	6.98	10.45	
	12:00 PM	1:00 PM	4.58	5.80	9.15	
	1:00 PM	2:00 PM	4.08	4.58	8.15	
	2:00 PM	3:00 PM	3.48	4.50	6.95	
	3:00 PM	4:00 PM	3.53	3.93	7.05	
	4:00 PM	5:00 PM	3.33	3.75	6.65	
	5:00 PM	6:00 PM	3.48	3.75	6.95	
	6:00 PM	7:00 PM	3.28	3.75	6.55	
	7:00 PM	8:00 PM	3.53	4.13	7.05	
	8:00 PM	9:00 PM	4.03	4.78	8.05	
	9:00 PM	10:00 PM	4.78	5.28	9.55	
	10:00 PM	11:00 PM	4.88	5.63	9.75	
	11:00 PM	12:00 AM	5.58	6.13	11.15	
9/20/2008	12:00 AM	1:00 AM	5.53	6.28	11.05	
	1:00 AM	2:00 AM	5.78	6.53	11.55	
	2:00 AM	3:00 AM	5.98	6.53	11.95	
	3:00 AM	4:00 AM	6.00	7.13	12.00	
	4:00 AM	5:00 AM	6.15	6.65	12.30	
	5:00 AM	6:00 AM	6.20	6.73	12.40	
	6:00 AM	7:00 AM	5.85	6.88	11.70	
	7:00 AM	8:00 AM	5.80	6.55	11.60	
	8:00 AM	9:00 AM	5.40	5.35	10.80	
	9:00 AM	10:00 AM	4.58	4.58	9.15	
	10:00 AM	11:00 AM	3.83	3.95	7.65	
	11:00 AM	12:00 PM	3.60	3.80	7.20	
	12:00 PM	1:00 PM	2.70	2.98	5.40	
	1:00 PM	2:00 PM	2.33	2.30	4.65	
	2:00 PM	3:00 PM	2.15	2.08	4.30	
	3:00 PM	4:00 PM	1.98	1.90	3.95	
	4:00 PM	5:00 PM	2.03	2.03	4.05	
	5:00 PM	6:00 PM	2.18	2.13	4.35	
	6:00 PM	7:00 PM	2.00	1.98	4.00	
	7:00 PM	8:00 PM	2.33	2.28	4.65	
	8:00 PM	9:00 PM	2.68	2.95	5.35	
	9:00 PM	10:00 PM	2.93	3.03	5.85	
	10:00 PM	11:00 PM	3.25	3.25	6.50	
	11:00 PM	12:00 AM	3.43	3.53	6.85	
	12:00 AM	1:00 AM	3.73	3.98	7.45	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
9/21/2008	1:00 AM	2:00 AM	3.88	3.88	7.75	
	2:00 AM	3:00 AM	3.95	3.95	7.90	
	3:00 AM	4:00 AM	4.10	4.08	8.20	
	4:00 AM	5:00 AM	4.10	4.15	8.20	
	5:00 AM	6:00 AM	4.08	4.05	8.15	
	6:00 AM	7:00 AM	4.08	4.00	8.15	
	7:00 AM	8:00 AM	4.23	3.88	8.45	
	8:00 AM	9:00 AM	3.73	3.73	7.45	
	9:00 AM	10:00 AM	3.25	3.35	6.50	
	10:00 AM	11:00 AM	2.68	3.10	5.35	
	11:00 AM	12:00 PM	2.75	2.75	5.50	
	12:00 PM	1:00 PM	2.25	2.33	4.50	
	1:00 PM	2:00 PM	1.83	1.88	3.65	
	2:00 PM	3:00 PM	1.75	1.93	3.50	
	3:00 PM	4:00 PM	1.78	1.85	3.55	
	4:00 PM	5:00 PM	1.75	1.75	3.50	
	5:00 PM	6:00 PM	1.80	1.95	3.60	
	6:00 PM	7:00 PM	2.18	2.20	4.35	
	7:00 PM	8:00 PM	2.98	3.03	5.95	
	8:00 PM	9:00 PM	3.53	3.58	7.05	
	9:00 PM	10:00 PM	4.43	4.58	8.85	
	10:00 PM	11:00 PM	5.23	5.50	10.45	
	11:00 PM	12:00 AM	5.88	6.15	11.75	
9/22/2008	12:00 AM	1:00 AM	6.03	6.55	12.05	
	1:00 AM	2:00 AM	6.18	6.48	12.35	
	2:00 AM	3:00 AM	6.33	6.30	12.65	
	3:00 AM	4:00 AM	7.28	6.33	14.55	
	4:00 AM	5:00 AM	6.03	5.80	12.07	
	5:00 AM	6:00 AM	6.08	5.70	12.15	
	6:00 AM	7:00 AM	5.75	5.70	11.50	
	7:00 AM	8:00 AM	6.08	5.43	12.15	
	8:00 AM	9:00 AM	7.00	5.00	14.00	
	9:00 AM	10:00 AM	3.88	3.88	7.75	
	10:00 AM	11:00 AM	2.88	3.05	5.75	
	11:00 AM	12:00 PM	2.20	2.33	4.40	
	12:00 PM	1:00 PM	2.03	2.08	4.05	
	1:00 PM	2:00 PM	1.65	1.68	3.30	
	2:00 PM	3:00 PM	1.75	1.60	3.50	
	3:00 PM	4:00 PM	2.38	2.23	4.75	
	4:00 PM	5:00 PM	2.13	1.80	4.25	
	5:00 PM	6:00 PM	2.03	1.90	4.05	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
	6:00 PM	7:00 PM	2.25	1.93	4.50	
	7:00 PM	8:00 PM	2.03	1.90	4.05	
	8:00 PM	9:00 PM	2.17	1.95	4.33	
	9:00 PM	10:00 PM	2.98	2.30	5.95	
	10:00 PM	11:00 PM	3.88	2.73	7.75	
	11:00 PM	12:00 AM	3.03	2.80	6.05	
9/23/2008	12:00 AM	1:00 AM	3.30	3.18	6.60	
	1:00 AM	2:00 AM	3.25	3.20	6.50	
	2:00 AM	3:00 AM	3.48	3.18	6.95	
	3:00 AM	4:00 AM	3.63	3.38	7.25	
	4:00 AM	5:00 AM	3.50	3.30	7.00	
	5:00 AM	6:00 AM	3.38	3.50	6.75	
	6:00 AM	7:00 AM	3.53	3.65	7.05	
	7:00 AM	8:00 AM	3.45	3.60	6.90	
	8:00 AM	9:00 AM	3.30	3.05	6.60	
	9:00 AM	10:00 AM	2.68	2.63	5.35	
	10:00 AM	11:00 AM	1.93	2.30	3.85	
	11:00 AM	12:00 PM	1.53	1.58	3.05	
	12:00 PM	1:00 PM	1.38	1.33	2.75	
	1:00 PM	2:00 PM	1.20	1.28	2.40	
	2:00 PM	3:00 PM	1.25	1.08	2.50	
	3:00 PM	4:00 PM	1.18	1.20	2.35	
	4:00 PM	5:00 PM	1.23	1.20	2.45	
	5:00 PM	6:00 PM	1.13	1.10	2.25	
	6:00 PM	7:00 PM	1.18	1.60	2.35	
	7:00 PM	8:00 PM	1.20	1.15	2.40	
	8:00 PM	9:00 PM	1.70	1.48	3.40	
	9:00 PM	10:00 PM	2.15	1.98	4.30	
	10:00 PM	11:00 PM	2.38	2.45	4.75	
	11:00 PM	12:00 AM	2.75	2.43	5.50	
	12:00 AM	1:00 AM	2.98	2.80	5.95	
	1:00 AM	2:00 AM	3.18	3.03	6.35	
	2:00 AM	3:00 AM	3.15	3.05	6.30	
	3:00 AM	4:00 AM	3.35	3.10	6.70	
	4:00 AM	5:00 AM	3.40	3.08	6.80	
	5:00 AM	6:00 AM	3.30	3.25	6.60	
	6:00 AM	7:00 AM	3.55	3.40	7.10	
	7:00 AM	8:00 AM	3.43	3.33	6.85	
	8:00 AM	9:00 AM	3.20	3.28	6.40	
	9:00 AM	10:00 AM	2.65	3.20	5.30	
	10:00 AM	11:00 AM	2.00	1.83	4.00	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
9/24/2008	11:00 AM	12:00 PM	1.53	1.40	3.05	
	12:00 PM	1:00 PM	1.28	1.10	2.55	
	1:00 PM	2:00 PM	1.05	1.10	2.10	
	2:00 PM	3:00 PM	2.13	0.95	4.25	
	3:00 PM	4:00 PM	0.98	0.80	1.95	
	4:00 PM	5:00 PM	0.90	0.90	1.80	
	5:00 PM	6:00 PM	1.10	0.85	2.20	
	6:00 PM	7:00 PM	1.33	1.28	2.65	
	7:00 PM	8:00 PM	1.23	2.23	2.45	
	8:00 PM	9:00 PM	1.50	1.75	3.00	
	9:00 PM	10:00 PM	2.03	2.13	4.05	
	10:00 PM	11:00 PM	2.48	2.30	4.95	
9/25/2008	11:00 PM	12:00 AM	2.85	2.58	5.70	
	12:00 AM	1:00 AM	2.85	2.60	5.70	
	1:00 AM	2:00 AM	2.93	2.83	5.85	
	2:00 AM	3:00 AM	3.83	3.10	7.65	
	3:00 AM	4:00 AM	2.83	2.85	5.65	
	4:00 AM	5:00 AM	2.85	3.10	5.70	
	5:00 AM	6:00 AM	3.20	3.05	6.40	
	6:00 AM	7:00 AM	3.00	3.18	6.00	
	7:00 AM	8:00 AM	3.05	3.03	6.10	
	8:00 AM	9:00 AM	2.63	2.68	5.25	
	9:00 AM	10:00 AM	2.10	2.20	4.20	
	10:00 AM	11:00 AM	1.43	1.40	2.85	
	11:00 AM	12:00 PM	1.13	1.63	2.25	
	12:00 PM	1:00 PM	0.78	0.90	1.55	
	1:00 PM	2:00 PM	0.83	0.73	1.65	
	2:00 PM	3:00 PM	0.83	0.85	1.65	
	3:00 PM	4:00 PM	0.78	0.70	1.55	
	4:00 PM	5:00 PM	0.90	1.08	1.80	
	5:00 PM	6:00 PM	1.03	0.95	2.05	
	6:00 PM	7:00 PM	1.18	1.20	2.35	
	7:00 PM	8:00 PM	1.95	1.95	3.90	
	8:00 PM	9:00 PM	2.75	2.65	5.50	
	9:00 PM	10:00 PM	3.73	3.70	7.45	
	10:00 PM	11:00 PM	3.53	3.65	7.05	
	11:00 PM	12:00 AM	3.35	3.60	6.70	
	12:00 AM	1:00 AM	3.38	3.65	6.75	
	1:00 AM	2:00 AM	3.58	3.60	7.15	
	2:00 AM	3:00 AM	3.98	4.15	7.95	
	3:00 AM	4:00 AM	4.30	4.30	8.60	

Table 1
Hourly Average Turbidity Monitoring Data
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Date	Time		Up stream	Down stream	2X Upstream	Comments
			NTU	NTU	NTU	
9/26/2008	4:00 AM	5:00 AM	5.08	5.05	10.15	
	5:00 AM	6:00 AM	5.98	6.75	11.95	
	6:00 AM	7:00 AM	8.48	9.10	16.95	
	7:00 AM	8:00 AM	10.55	11.58	21.10	
	8:00 AM	9:00 AM	11.23	12.18	22.45	
	9:00 AM	10:00 AM	11.35	11.65	22.70	
	10:00 AM	11:00 AM	11.40	10.60	22.80	
	11:00 AM	12:00 PM	9.05	9.08	18.10	
	12:00 PM	1:00 PM	8.28	8.20	16.55	
	1:00 PM	2:00 PM	6.68	7.15	13.35	
	2:00 PM	3:00 PM	5.83	6.00	11.65	
	3:00 PM	4:00 PM	5.55	6.43	11.10	
	4:00 PM	5:00 PM	4.95	5.33	9.90	
	5:00 PM	6:00 PM	4.85	4.78	9.70	
	6:00 PM	7:00 PM	4.90	5.43	9.80	
	7:00 PM	8:00 PM	5.28	5.23	10.55	
	8:00 PM	9:00 PM	5.93	5.55	11.85	
	9:00 PM	10:00 PM	6.23	6.53	12.45	
	10:00 PM	11:00 PM	6.83	7.00	13.65	
	11:00 PM	12:00 AM	7.10	7.20	14.20	
9/27/2008	12:00 AM	1:00 AM	7.25	7.25	14.50	
	1:00 AM	2:00 AM	7.03	7.60	14.05	
	2:00 AM	3:00 AM	7.40	7.13	14.80	
	3:00 AM	4:00 AM	7.08	7.45	14.15	
	4:00 AM	5:00 AM	7.08	7.45	14.15	
	5:00 AM	6:00 AM	7.58	7.53	15.15	
	6:00 AM	7:00 AM	7.60	7.40	15.20	
	7:00 AM	8:00 AM	7.75	8.10	15.50	
	8:00 AM	9:00 AM	7.68	7.78	15.35	
	9:00 AM	10:00 AM	8.35	7.28	16.70	
	10:00 AM	11:00 AM	5.98	6.45	11.95	

Table 2
Surface Water Monitoring Results
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

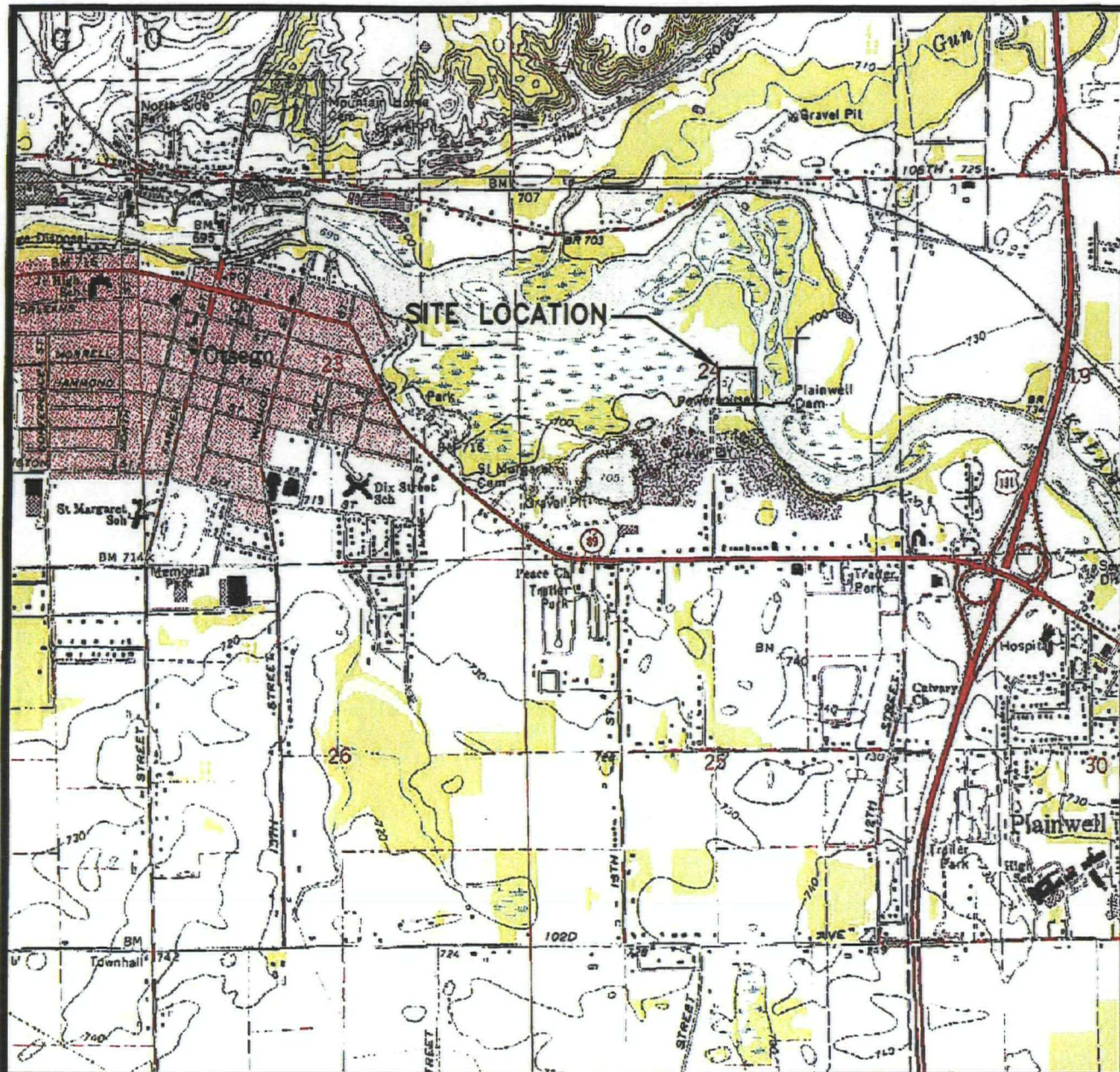
Sample Location:	SW01-D2.0U	SW02-D2.0D	SW03-D2.0D	SW04-D2.0U	SW05-D2.0D	SW06-D2.0U
Comment:	Upstream	Downstream	Downstream	Upstream	Downstream	Upstream
Date:	9/6/2007	9/6/2007	9/7/2007	9/7/2007	9/18/2007	9/18/2007
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aroclor-1016	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)
Aroclor-1221	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)
Aroclor-1232	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)
Aroclor-1242	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)
Aroclor-1248	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)
Aroclor-1254	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)
Aroclor-1260	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)
Total PCBs	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.2)

Table 3
Confirmation Sediment Sampling Results
Powerhouse Channel - 12th Street Landfill - Plainwell, MI

Sample Location:	Location 1			Location 2		Location 3		
Sample Number	SD01	SD07		SD02	SD08	SD03		
Comment:			Duplicate				Duplicate	Duplicate
Date:	9/10/2007	9/13/2007	9/13/2007	9/10/2007	9/13/2007	9/10/2007	9/10/2007	9/10/2007
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor-1016	ND(< 0.34)	ND(<0.097)	ND(<0.094)	ND(<0.24)	ND(<0.094)	ND(<0.16)	ND(<0.16)	ND(<0.18)
Aroclor-1221	ND(< 0.34)	ND(<0.097)	ND(<0.094)	ND(<0.24)	ND(<0.094)	ND(<0.16)	ND(<0.16)	ND(<0.18)
Aroclor-1232	ND(< 0.34)	ND(<0.097)	ND(<0.094)	ND(<0.24)	ND(<0.094)	ND(<0.16)	ND(<0.16)	ND(<0.18)
Aroclor-1242	ND(< 0.34)	ND(<0.097)	ND(<0.094)	ND(<0.24)	ND(<0.094)	ND(<0.16)	ND(<0.16)	ND(<0.18)
Aroclor-1248	2.3	0.26	0.33	2.1	0.17	0.6	0.62	0.56P
Aroclor-1254	0.82 P	0.11P	0.15	0.7	0.096	0.44	0.51	0.45
Aroclor-1260	ND(< 0.34)	ND(<0.097)	ND(<0.094)	ND(<0.24)	ND(<0.094)	ND(<0.16)	ND(<0.16)	ND(<0.18)
Total PCBs	3.12	0.37	0.48	2.8	0.266	1.04	1.13	1.01

Sample Location:	Location 4		Location 5	Location 6	
Sample Number	SD04		SD05	SD06	SD09
Comment:		Duplicate			
Date:	9/10/2007	9/10/2007	9/10/2007	9/10/2007	9/13/2007
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor-1016	ND(<0.01)	ND(<0.13)	ND(<0.12)	ND(<0.16)	ND(<0.091)
Aroclor-1221	ND(<0.01)	ND(<0.13)	ND(<0.12)	ND(<0.16)	ND(<0.091)
Aroclor-1232	ND(<0.01)	ND(<0.13)	ND(<0.12)	ND(<0.16)	ND(<0.091)
Aroclor-1242	ND(<0.01)	ND(<0.13)	ND(<0.12)	ND(<0.16)	ND(<0.091)
Aroclor-1248	0.13	0.35	0.23	0.84	0.4
Aroclor-1254	0.13	0.23	0.17	0.74	0.18
Aroclor-1260	ND(<0.01)	ND(<0.13)	ND(<0.12)	ND(<0.16)	ND(<0.091)
Total PCBs	0.26	0.58	0.4	1.58	0.58





STATE LOCATION

SITE LOCATOR MAP
12th Street Landfill
Emergency Action Documentation Report
Otsego Township, Michigan

SOURCE: BASE MAP FROM OTSEGO, MICHIGAN
 7.5 MINUTE USGS QUADRANGLE.

RMT

DWN. BY:	RWD
APPROVED BY:	
DATE:	JULY 2008
PROJ. #	00-05130.05
FILE #	51300501.DWG

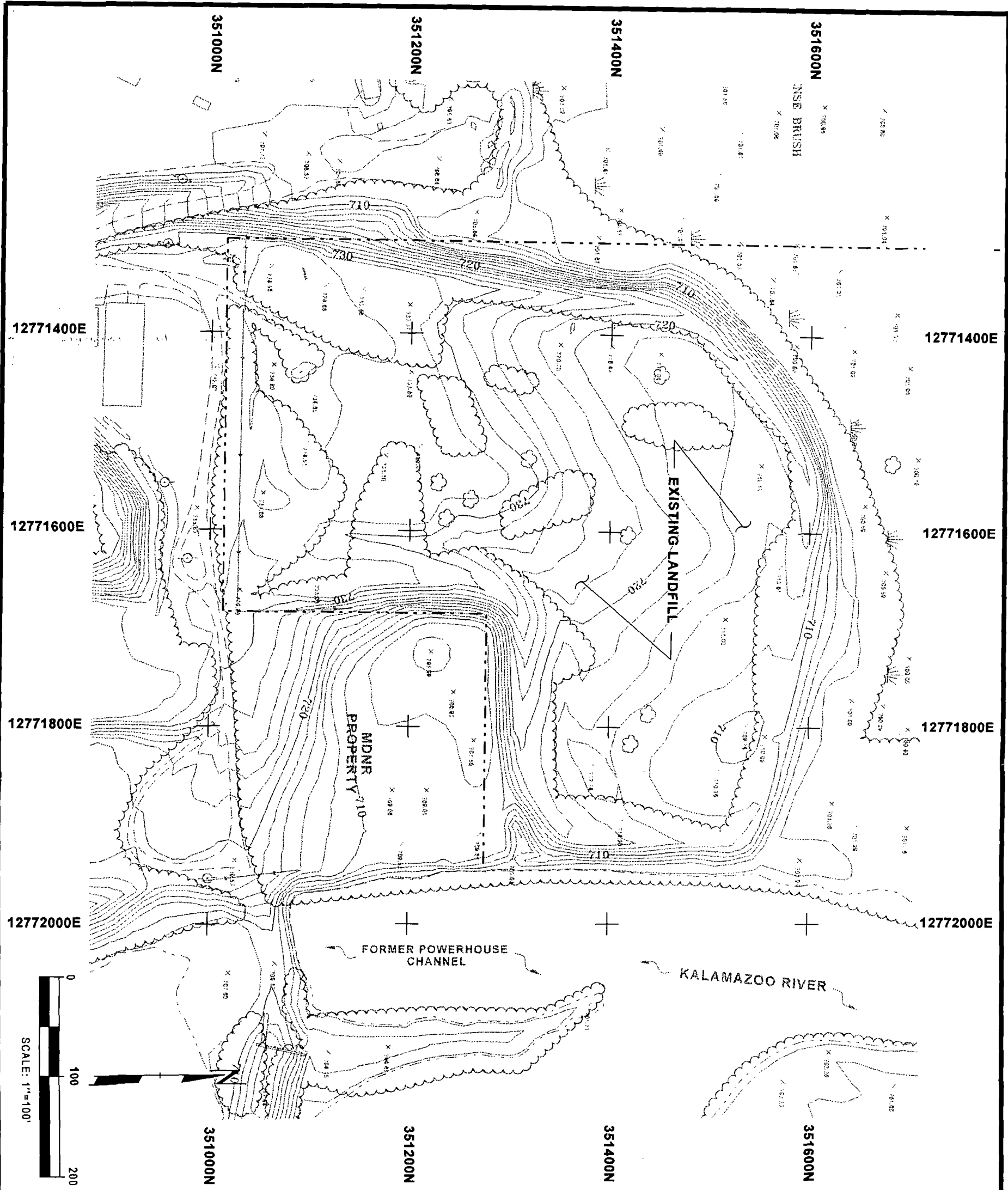
FIGURE 1

Plot Data
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vellet Plot Date - Fri Jul 25 08:36:22 2008
Plot File - J:\05131\05\existing.prf
Pen Table - \\msn-plot\equorum\$TBL\MSV8Default7000.tbl
Levels On - 1-63

Reference Files
Ref. File 1 - J:\05131\05\bmc033005.dgn
Ref. File 2 - J:\05131\05\proposed.dgn
Ref. File 3 - J:\05131\05\bmrmt.dgn
Ref. File 4 - J:\05131\05\11x17bdr.dgn

Logical Names
(1) bmc
(2) pro
(3) bmr
(4) RF3

Levels
(1) 27,29
(2) 1-63
(3) 1-63
(4) 1-63



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- + GRID LOCATION
- EXISTING UNPAVED ROAD
- - - EXISTING FENCE
- EXISTING BUILDING
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING SPOT ELEVATION
- EXISTING TREES AND/OR BRUSH
- EXISTING WETLAND LIMITS
- EXISTING EDGE OF WATER

NOTES

1. BASE TOPOGRAPHY PROVIDED BY OAS, INC. OF SEYMOUR, INDIANA BASED ON AERIAL SURVEY DATED 3/30/2005. COORDINATES ARE MICHIGAN STATE PLANE-SOUTH ZONE. THE VERTICAL DATUM IS NGVD 29.
2. PROPERTY BOUNDARY BASED ON LEGAL DESCRIPTION PROVIDED BY USEPA IN A FAX DATED MARCH 30, 2004. COORDINATES FOR S 1/4 CORNER AND N 1/4 CORNER OF SECTION 24 AND NORTH BEARING USED TO PLOT PROPERTY LINE WERE PROVIDED BY HOLLAND ENGINEERING AND ARE BASED ON MICHIGAN STATE PLANE-SOUTH ZONE COORDINATES.

PROJECT: 12TH STREET LANDFILL
EMERGENCY ACTION DOCUMENTATION REPORT
OTSEGO TOWNSHIP, MICHIGAN

PRE-CONSTRUCTION CONDITIONS

DRAWN BY:	vellet	SCALE:	1"=100'	PROJ. NO.	05131.05
CHECKED BY:				FILE NO.	EXISTING.PLT
APPROVED BY:		DATE PRINTED:		FIGURE	2
DATE:	JULY 2008				

RMt

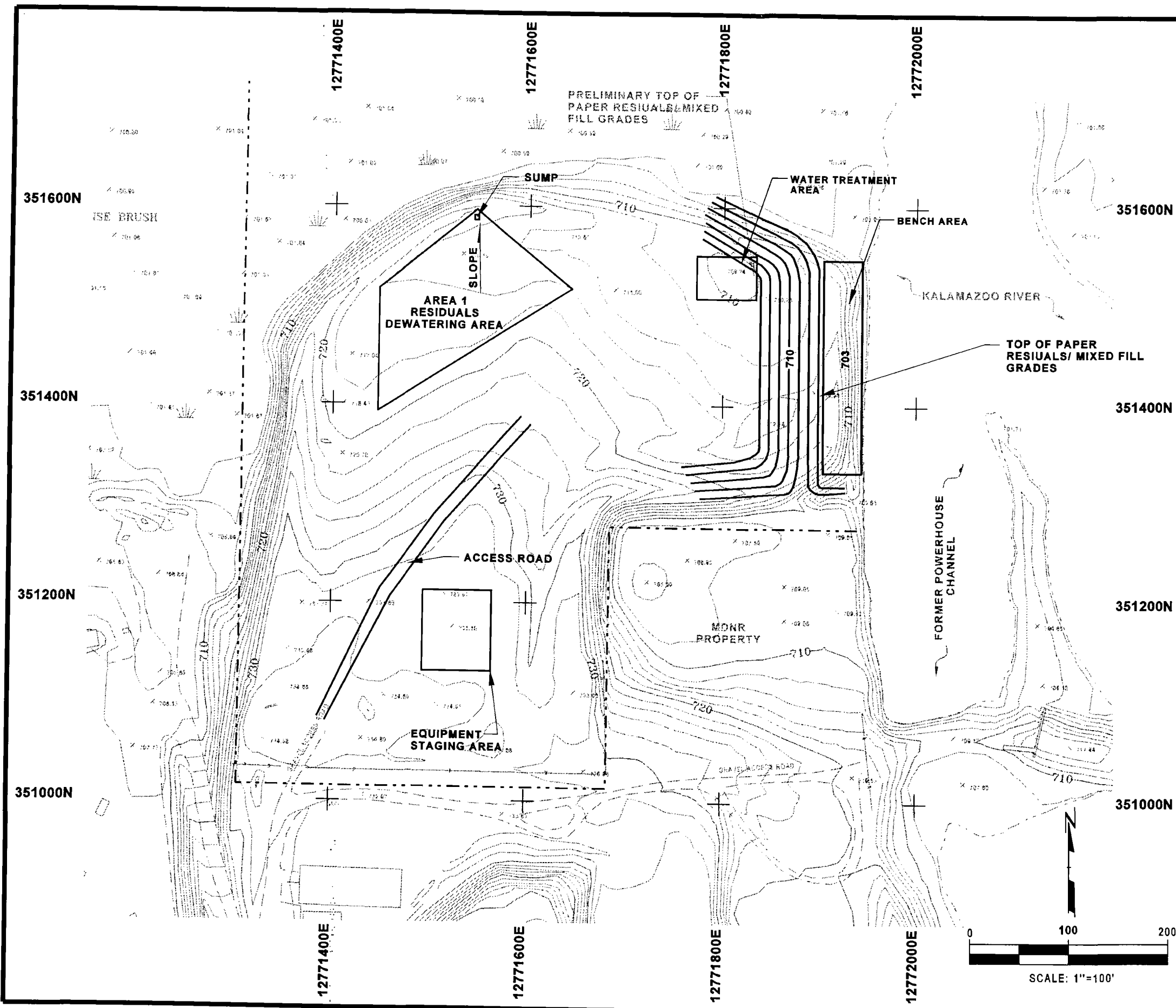
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

Levels
(1) 27
(2) 1-63
(3) 1-63
(4) 1-63

Logical Names
(1) bmc
(2) bmr
(3) pro
(4) bdr

Reference Files
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Ref. File 2 - J:\05131\05\bmrmr.dgn
Ref. File 3 - J:\05131\05\bmrmr.dgn
Ref. File 4 - J:\05131\05\bmrmr.dgn

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Plot File: J:\05131\05\site_plan.plt
Pen Table: J:\msn-plot\equorun\$TBL\MSV8Default7000.tbl
Levels On: 1-19



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- + GRID LOCATION
- - - EXISTING UNPAVED ROAD
- - - EXISTING FENCE
- - - EXISTING BUILDING
- - - EXISTING 10' CONTOUR
- - - EXISTING 2' CONTOUR
- - - EXISTING SPOT ELEVATION
- - - EXISTING WETLAND LIMITS
- - - EXISTING EDGE OF WATER

NOTES

1. REFER TO FIGURE 2 FOR BASE MAP NOTES.

**PROJECT: 12TH STREET LANDFILL
EMERGENCY ACTION DOCUMENTATION REPORT
OTSEGO TOWNSHIP, MICHIGAN**

SHEET TITLE: PROJECT SITE PLAN

DRAWN BY: velltet	SCALE: 1"=100'	PROJ. NO. 05131.05
CHECKED BY:	DATE PRINTED:	FILE NO. SITE PLAN.PLT
APPROVED BY:		FIGURE 3
DATE: JULY 2008		

RMT

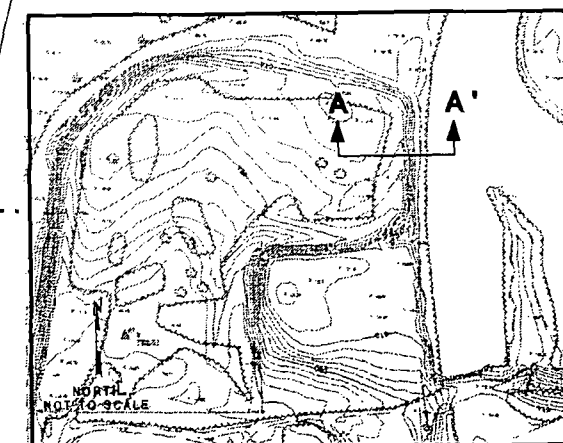
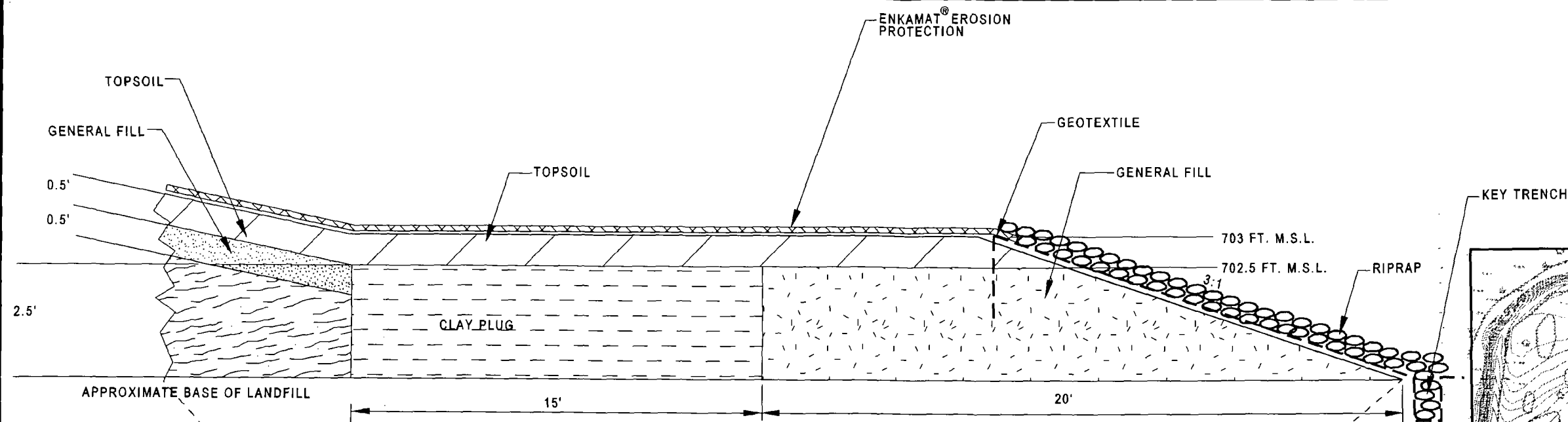
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

Levels
(1) 27-29
(2) 1-63
(3) *no ref levels*
(4) *no ref levels*

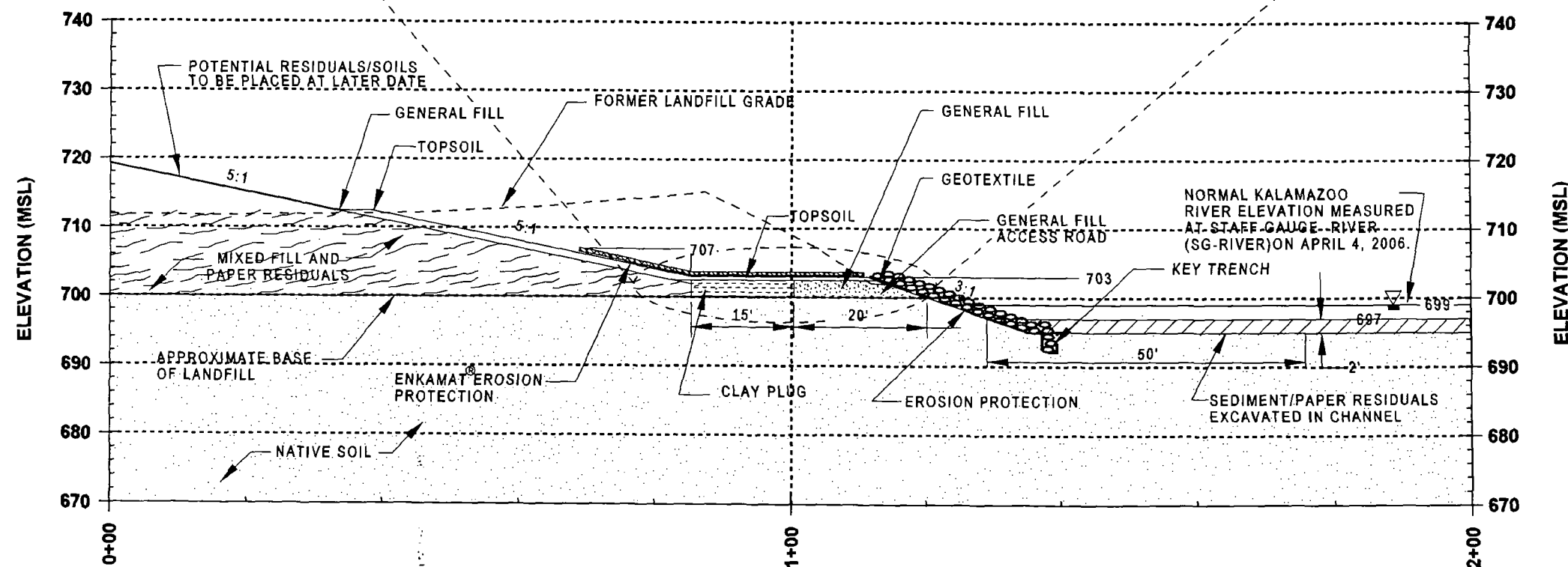
Logical Names
(1) bmc
(2) bdr
(3) *no ref logical*
(4) *no ref logical*

Reference Files
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Ref. File 2 - J:\05131\05\1117bdr.dgn
Ref. File 3 - *no ref name*
Ref. File 4 - *no ref name*

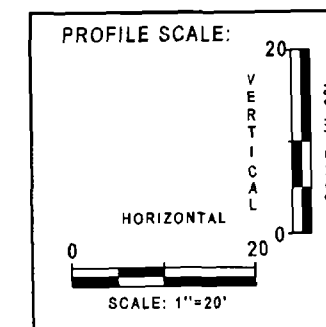
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Levels On: 1,17-28



CROSS SECTION LOCATOR

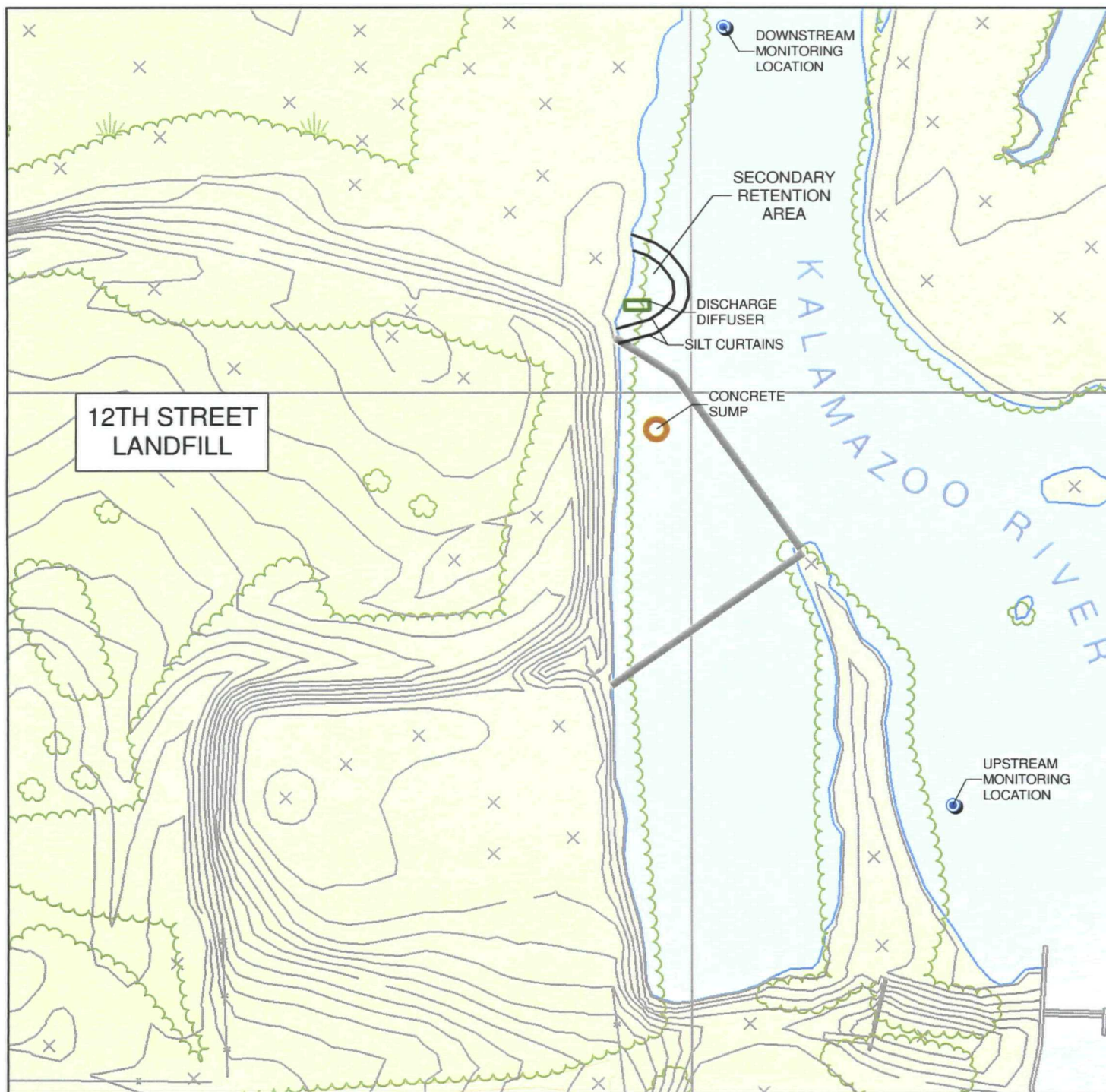


CROSS SECTION A-A'
(LOOKING NORTH)



WORKING COPY

PROJECT: 12TH STREET LANDFILL			
EMERGENCY ACTION DOCUMENTATION REPORT			
OTSEGO TOWNSHIP, MICHIGAN			
SHEET TITLE: CROSS SECTION A-A'			
DRAWN BY: vettlet	SCALE: AS SHOWN	PROJ. NO. 05131.05	
CHECKED BY:		FILE NO. XSECTION.PLT	
APPROVED BY:	DATE PRINTED:	FIGURE 4	
DATE: JULY 2008			
RMT 744 Heartland Trail Madison, WI 53717-1934 P.O. Box 8923 53708-8923 Phone: 608-831-4444 Fax: 608-831-3334			



LEGEND

- PORTADAM LOCATION
- MONITORING LOCATION

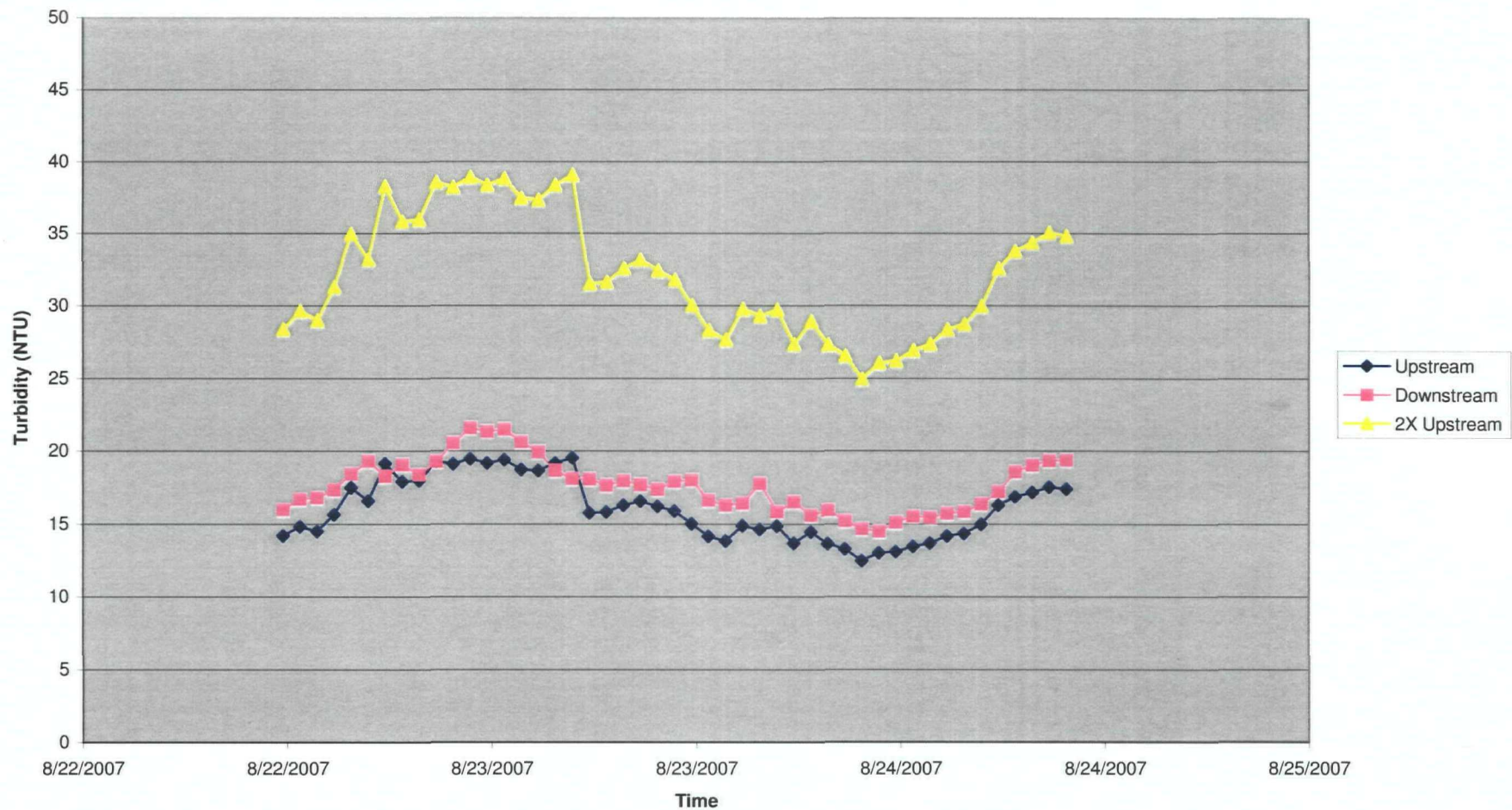
0 25 50 100
FEET
1:1,200
1 INCH EQUALS 100 FEET

PROJECT: 12TH ST. LANDFILL EMERGENCY ACTION DOCUMENTATION REPORT OTSEGO TOWNSHIP, MICHIGAN		
SHEET TITLE: FORMER POWERHOUSE DISCHARGE CHANNEL REMOVAL CONDITIONS		
DRAWN BY: PAPEZ J	SCALE: AS NOTED	PRJ. NO. 00-05131.05
CHECKED BY:		FILE NO. 51310501.mxd
APPROVED BY:	DATE PRINTED: 7/11/2008	FIGURE 5
DATE: JULY 2008		

RMT

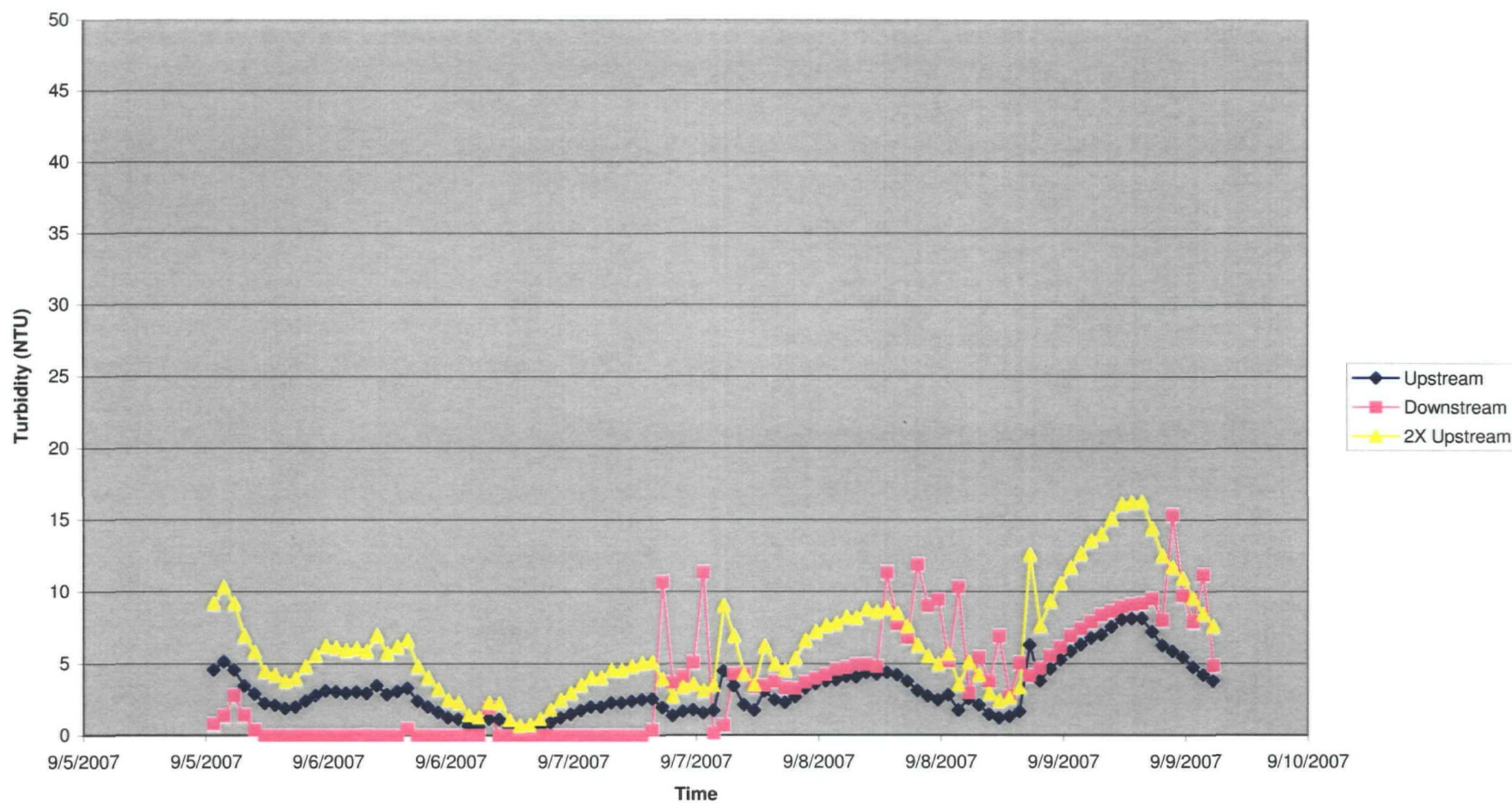
130 N. Patrick Blvd., Suite 180
Bloomfield, WI 53005-3054
Phone: 262-879-1212
Fax: 262-879-1220

Figure 6-1
Turbidity Data 8/22/2008 - 8/24/2008
Powerhouse Channel - 12th Street Landfill - Plainwell, MI



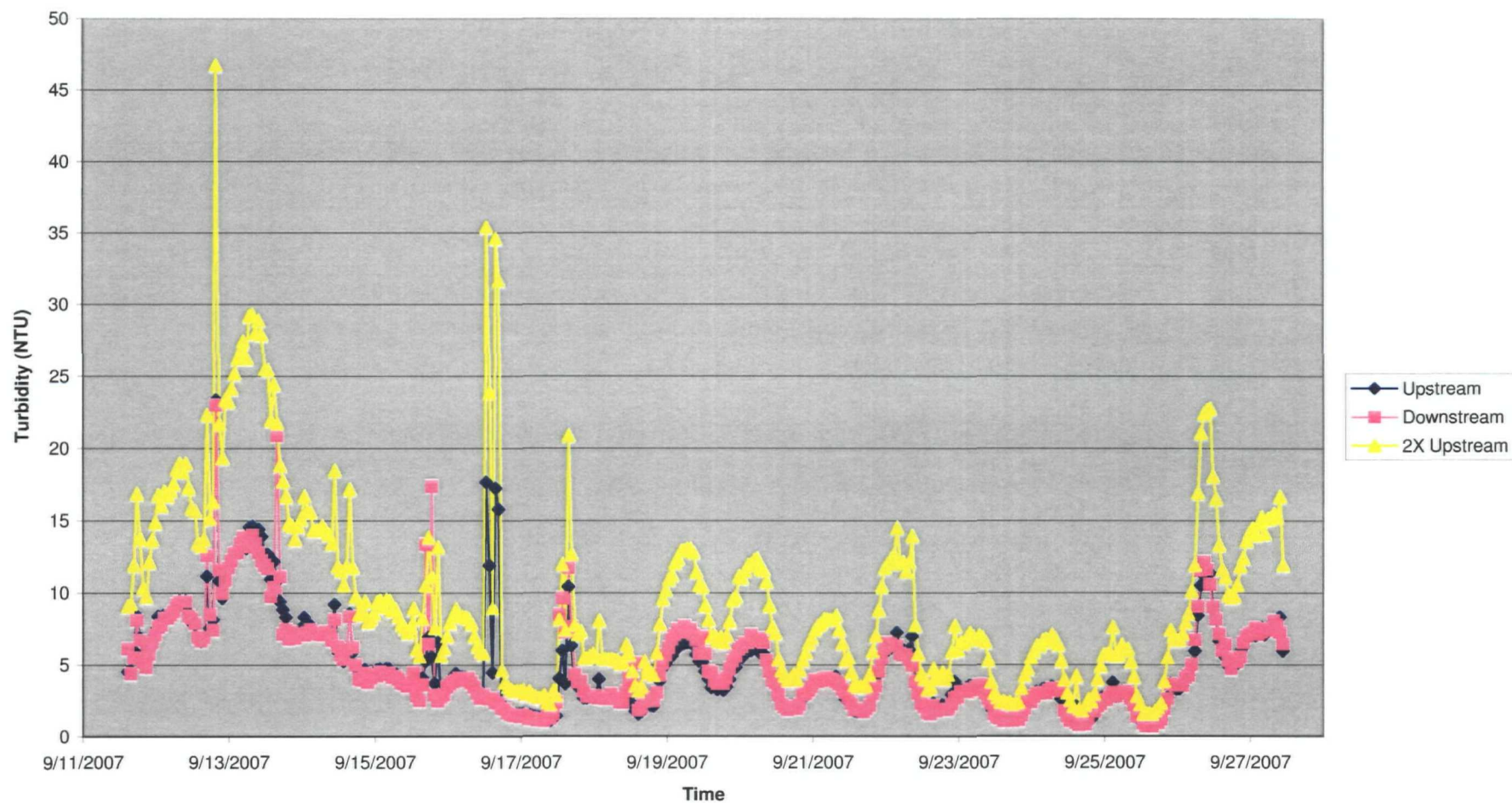
Note:
 Actions taken regarding exceedances are explained on Table 1.

Figure 6-2
 Turbidity Data 9/5/2008 - 9/9/2008
 Powerhouse Channel - 12th Street Landfill - Plainwell, MI

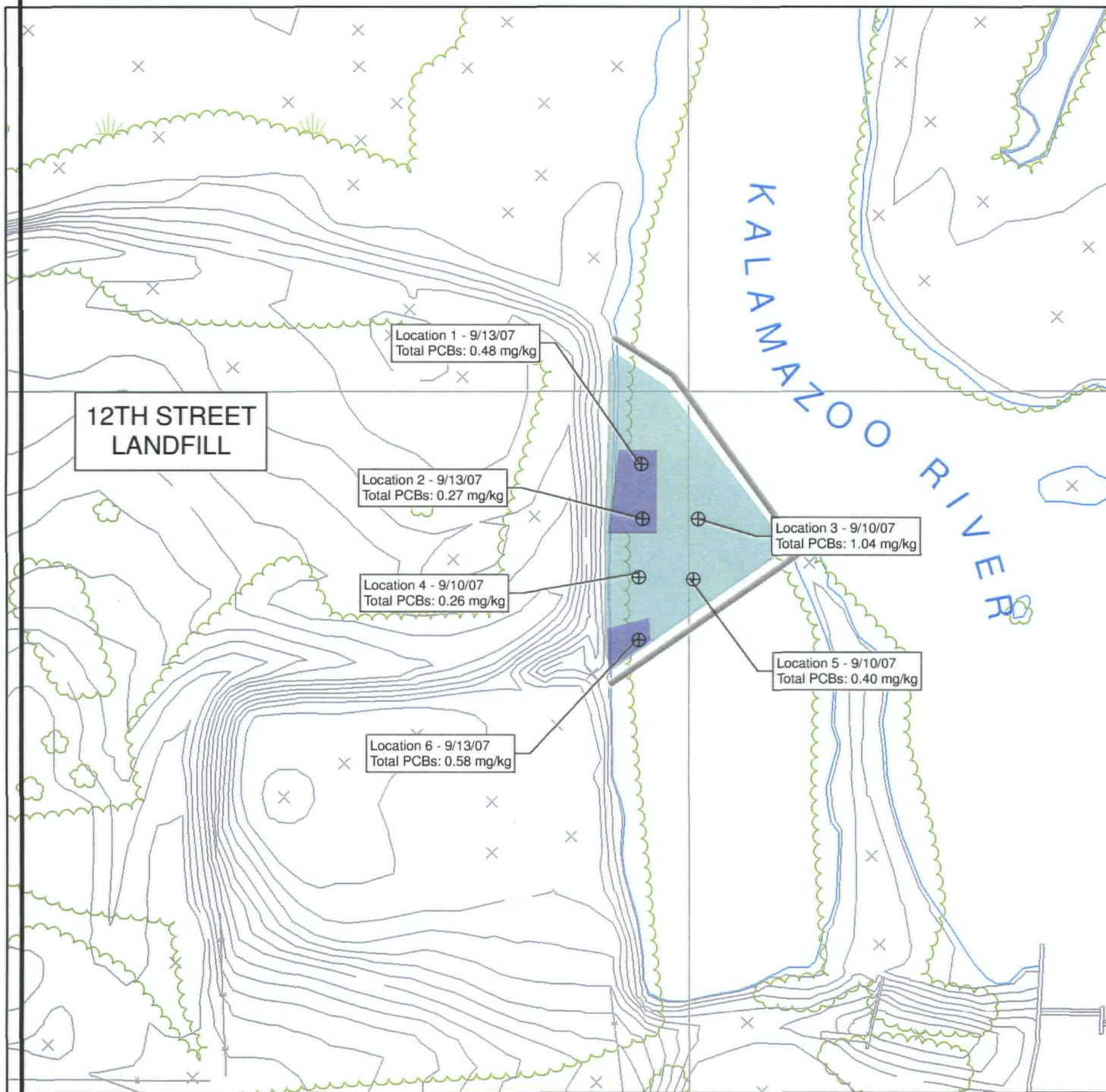


Note:
 Actions taken regarding exceedances are explained on Table 1.

Figure 6-3
Turbidity Data 9/11/2008 - 9/27/2008
Powerhouse Channel - 12th Street Landfill - Plainwell, MI



Note:
 Actions taken regarding exceedances are explained on Table 1.



LEGEND

⊕ Confirmatory Sample Locations

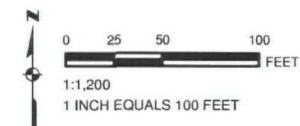
— Portadam Location

Extent of Excavation

Phase 1 - Excavation

Phase 2 - Additional Excavation

Note- Location 1,2,6 sampled on 9/10/07.
Additional excavation and resampled on 9/13/07.



PROJECT: 12TH ST. LANDFILL			
EMERGENCY ACTION DESIGN REPORT			
OTSEGO TOWNSHIP, MICHIGAN			
SHEET TITLE: FORMER POWERHOUSE DISCHARGE CHANNEL			
CONFIRMATORY SAMPLE LOCATIONS			
DRAWN BY: WEBERN	SCALE: AS NOTED	PROJ. NO.: 00-05131-03	
CHECKED BY:		FILE NO.: 51310301.mxd	
APPROVED BY:	DATE PRINTED: 9/18/07	FIGURE 7	
DATE: JULY 2008			
RMT 150 N. Patrick Blvd., Suite 180 Brookfield, WI 53005-5854 Phone: 262-879-1212 Fax: 262-879-1220			

Appendix A
Relevant Correspondence Associated
with the 12th Street Landfill Site

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3590

Reply to the Attention Of: SR-6J

May 17, 2007

Weyerhaeuser Company
Attn: Jennifer Hale
P.O. Box 9777
Mail Stop WTC-2G2
Federal Way, WA 98063

RE: Notification of Supervising Contractor
Operable Unit #4
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Plainwell, Michigan

Dear Ms. Hale:

Pursuant to Section IX, Paragraph 27a of the Consent Decree for Operable Unit #4 of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site Plainwell, Michigan, the United States Environmental Protection Agency accepts Weyerhaeuser's decision to use RMT Inc as their supervising contractor.

Should you have any questions or need additional information concerning this matter feel free to give me a call at (312) 353-8983

Sincerely,

Michael Berkoff
Remedial Project Manager

cc: Eileen Furey, U.S EPA
James Saric, U.S. EPA
Linda Hicken, RMT, Inc.
Kathy Huibregtse, RMT, Inc.
James Hutchens, RMT, Inc.

Weyerhaeuser Company
Attn: Jennifer Haile
P.O. Box 9777
Mail Stop EC2-2C1
Federal Way, WA 98063

RMT, Inc.
Attn: Linda Hicken
744 Heartland Trail
Madison, WI 53717

RMT, Inc.
Attn: Kathy Huibregtse
150 North Patrick Boulevard, Suite 180
Brookfield, WI 53045

RMT, Inc.
Attn: James Hutchens
150 North Patrick Boulevard, Suite 180
Brookfield, WI 53045

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SRT-4J

MEMORANDUM

DATE: May 22, 2007

SUBJECT: Approval for the initial revision of the Quality Assurance Project Plan for the Allied Paper/Portage Creek/ Kalamazoo River (MI) (Phase/Stage: RI/FS). QAPP was prepared by RMT, Inc.

FROM: Alida Roberman, Chemist, Field Services Section (FSS)

TO: Shari Kolak, Remedial Project Manager (RPM)

I am providing approval for the initial revision of the Quality Assurance Project Plan for the Allied Paper/Portage Creek/ Kalamazoo River (MI). The QAPP was prepared by Arcadis of New York, Inc. The subject QAPP was received by the Field Services Section (FSS) on April 19, 2007 (SF Log-in No. 3500).

The following should be corrected.

1. Acronyms: ICV.....initial calibration *verification* (last word should be added).
2. QAPP Worksheet #2. QAPP Identifying Information (page 1 of 12). "This Multi-Area QAPP is a project-specific QAPP... " – letter "T "is missing.
3. QAPP Worksheet #5-1 Plainwell TCRA Project Organization Chart. Alida Roberman is a QAPP reviewer, not the USEPA QA Manager. Please correct. The QAPP Worksheet #7 and Worksheet #9 should be changed as well.
4. Worksheet #28. Please clarify the number of samples in the analytical batch.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3590

Reply to the Attention Of: SR-6J

June 7, 2007

Via E-mail and Hard Copy

Jennifer Hale
Weyerhaeuser Company
P.O. Box 9777
Mail Stop WTC-2G2
Federal Way, WA 98063

RE: Approval of Bathymetry and Visual Sediment Assessment data Quality Objectives and Work Scope at 12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04 Plainwell, Michigan

Dear Ms. Hale:

The U.S. EPA has reviewed the Bathymetry and Visual Sediment Assessment data Quality Objectives and Work Scope for *12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04, Plainwell, Michigan*, dated June 6, 2007 (BSA). Weyerhaeuser Company (Weyerhaeuser) submitted the BSA in connection with certain emergency response work to be conducted pursuant to paragraph 67 of the Consent Decree for the Design and Implementation of Certain Response Actions at Operable Unit #4 and the Plainwell Mill Property of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (Docket No. 1:05CV003) (see letter from Weyerhaeuser to the U.S. EPA dated May 8, 2007).

U.S. EPA has determined that the BSA satisfies the basic requirements of a quality assurance plan for the bathymetry and sediment analysis that Weyerhaeuser intends to conduct. U.S. EPA authorizes Weyerhaeuser to conduct the activities described in the work scope, provided that you incorporate the following comments into your work and address them in your final report on this bathymetry report:

- All measurements should be tied to an existing survey datum. To correlate current water level and sediment measurements to existing data, installing a temporary staff gauge adjacent to the site should be considered.
- The work scope states that cores will be taken to a depth of 2 feet below sediment surface or refusal. In some cases the thickness of sediments may be greater than 2 feet. Cores should be taken to refusal to obtain adequate coverage.
- Describe how refusal was determined during the coring effort. Care must be taken to measure the full thickness of sediments present.

Please do not hesitate to call me at the below-listed number if you have any questions regarding this letter or require any clarification.

Sincerely,

Michael Berkoff
Remedial Project Manager
U.S EPA, Superfund Division
(312) 353-8983

cc via email: S. Borries, U.S. EPA
J. Saric, U.S. EPA
M. Mankowski, U.S. EPA
E. Furey, U.S. EPA
J. Hutchens, RMT, Inc.
K. Huibregtse, RMT, Inc.
J. Keiser, CH2MHill

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

77 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3590

Reply to the Attention Of: SR-6J

July 24, 2007

Via E-mail and Hard Copy

Mr. James Hutchens
RMT, Inc.
150 North Patrick Boulevard
Suite 180
Brookfield, WI 53045-5854
Fax: 262.879.1220

RE: Quality Assurance Project Plan
12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04
Plainwell, Michigan

Dear Mr. Hutchens:

The U.S. EPA has reviewed the Quality Assurance Project Plan for *12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04, Plainwell, Michigan*, dated June, 2007 (QAPP). U.S. EPA gives conditional approval to the QAPP provided that certain changes and additions are made. Please update the sections of the QAPP to which the following comments are applicable and send copies of these revised sections to U.S. EPA.

1. QAPP Worksheet #11: Second paragraph. Please provide a reference for the sampling and analytical protocol instead of "defined later in this document."
2. QAPP Worksheet #11: Last paragraph. Please put an estimate amount of samples which you are planning to collect and analyze to satisfy the project goal.
3. All Standard Operating Procedures (SOPs) from the Weyerhaeuser Analysis & Testing (WATS) laboratory should be updated and resubmitted for review. Standard Operating Procedure (SOP) from

this laboratory should be written in the requirement format according to EPA QA/G-6 document: www.epa.gov/quality/qs-docs/g6-final.pdf.

4. QAPP Worksheets #34, 35 & 36. Data Verification/Validation. Please explain how the data review and verification will be organized in this project to meet the Superfund requirements. A 100% laboratory data validation must be performed by an entity independent of the laboratory.

Please do not hesitate to me at the below-listed number if you have any questions regarding this letter or require any clarification of the comments listed above.

Sincerely,

Michael Berkoff
Remedial Project Manager
U.S EPA, Superfund Division
(312) 353-8983

cc via email: S. Borries, U.S. EPA
J. Saric, U.S. EPA
S. Chummar, U.S. EPA
L. Schmidt, U.S. EPA
M. Mankowski, U.S. EPA
E. Furey, U.S. EPA
J. Haile, Weyerhaeuser

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3590

Reply to the Attention Of: SR-6J

July 31, 2007

Via E-mail and Hard Copy

Mr. James Hutchens
RMT, Inc.
150 North Patrick Boulevard
Suite 180
Brookfield, WI 53045-5854
Fax: 262.879.1220

RE: Work Plan and Field Sampling Plan
12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04
Plainwell, Michigan

Dear Mr. Hutchens:

The U.S. EPA has reviewed the Work Plan and the Field Sampling Plan for *12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04, Plainwell, Michigan*, dated June, 2007 (WP, FSP). At this time, U.S. EPA can not give approval to the FSP and the WP. U.S. EPA requires that certain changes and additions have been made before approval can be granted. Please update the sections of the FSP and WP to which the following comments are applicable and send copies of the revised plans to U.S. EPA. Additionally, please include with the revisions a cover letter with responses to the comments listed below or references the change(s) in the revised WP or FSP.

Workplan

General Comments

1. The document provides limited detail for the basis of the design. Subsequent documents should include detail on the activities that will be performed with data supporting planned activities. The follow information should also be provided in subsequent documents:
 - An evaluation of the data previously collected.

- The excess capacity of the landfill.
- Volume of waste to be added to the landfill.
- It appears that investigation derived waste from the Plainwell Mill site is being proposed for disposal in the 12th Street Landfill. As of our most recent discussion, it sounded like this scenario was unlikely. If 12th street is no longer the intended disposal location for Plainwell Mill materials, please make this clear.
- The 'OSC' acronym should be preceded by 'RMT.' This acronym is used to refer to U.S. EPA's On-Scene Coordinators, and some distinction should be made between RMT On-Site Coordinators and U.S. EPA's On-Scene Coordinators.

Specific Comments

1. **Figure 2**
 - a. The data collected and evaluated to determine the sediment removal area must be provided to verify the removal boundaries.
 - b. The label "APPROXIMATE LIMITS OF WASTE" noted on the figure does not point to a boundary.
 - c. The earthen section of the Plainwell Dam is not identified on the figure.
 - d. What coordinate system is being used?
2. **Section 4.1 Clearing and Grubbing** – The text refers to two (2) 100x100' areas on top of the landfill that will be used to construct pads for sediment and soil placement. Figure 2 shows two (2) 200x200' containment areas and a 100x100' water treatment area. The text and figure should be consistent.
3. **Section 4.3 Sediment/Soil Containment Area** – Is the 3rd sentence referring to the existing cover? What is the depth of the existing cover?
4. **Section 5 Portadam Placement and Dewatering** – Additional information should be provided on the intended use of the Portadam.
 - a. Has an evaluation of the sediment consistency and ability to support the Portadam been performed? What is the consistency of the sediments in the river bottom?
 - b. What is the typical range of river elevation? Are there any provisions being taken for flooding out of enclosed area in mid-excavation?
 - c. What allowances will be made at the pump discharge so that sediment outside of the Portadams is not disturbed due to scour?
5. **Section 5 Portadam Placement and Dewatering** – Additional information should be provided on the turbidity monitoring for the decanted water.
 - a. What is the turbidity monitoring frequency?
 - b. What is the basis for the turbidity criteria of two times the upstream station?

6. **Section 6 Sediment/Soil Removal Operations** – Information should be provided on the construction of the pad potentially required for the excavator to reach further from shore. Will visual paper residuals be removed from the underlying sediments prior to the construction of the pad? What materials will the pad be constructed of and how will it be disposed of?
7. **Section 6 Sediment/Soil Removal Operations** – There is no mention of monitoring for PCBs in discharge water from dewatering the sediment. What will the discharge limits be?
8. **Section 8 Water Management** – What will the water capacity be in the containment area and in the tanks?

Field Sampling Plan

General Comments

1. This FSP does not appear to directly cover any sampling efforts. Prior to sampling, a complete description of the effort, including numbers of samples, types of analysis, and sample locations, should be provided.
2. There are numerous citations throughout the document; however, full references are not provided.
3. The MA-FSP can be applied to other areas of the Site, including Operable Unit No. 7, the Plainwell Mill, though only after an amendment or addendum. As such, I would recommend the editing of the following sections to remove mention of Operable Unit #7:
 - a. Section 1.4 (Page 3 of 23)
 - b. Section 2.1 (Page 7 of 23)
 - c. Section 3.1.1 (Page 12 of 23)

Specific Comments

1. **Table 2-1** – Sample parameters and frequencies should be identified for each type of sample.
2. **Section 3.1 Sample Designation** – Please verify that the sample numbering system presented in Section 3.1 is consistent with the existing Kalamazoo River Database requirements to allow others the ability to utilize the data if needed.
3. **Section 3.1 Sample Designation** – With the proposed sampling number system, it appears there could be duplicate numbers for samples if multiple sampling events take place. How will samples be differentiated if there are multiple sampling events?

4. **Section 3.1.3 Sample Number** – The example sample designation provided begins with “WY”. Section 3.1 identifies that the sample designations begin with the sample location. The placement of “WY” before the sample location is not consistent with the naming convention provided in this document.
5. **Section 3.1.4 Sample Date** – Both the sample date and time should be included in field logbooks.
6. **Section 3.2 Sample Containers and Preservation** – Sample containers should also be labeled with the sample date and time in accordance with Section 3.1.
7. **Section 4.2 Selection of Parameters** – The text states that the number and location of samples are summarized in Table 2-1 and Worksheets #17 and #18 in Appendix C. Turbidity monitoring in surface water is only defined as periodic. The frequency of turbidity monitoring should be defined.
8. **Section 4.2 Selection of Parameters** – Further detail for monitoring all discharge parameters should be provided with a process for modifying the treatment if criteria are exceeded.
9. **Section 4.4.1 Field Measurements** – Field calibration frequencies are identified in QAPP Worksheet #22. A calibration check of field measurements should also be performed on a daily basis. If the calibration drifts, an entire weeks worth of data could be lost before the problem is identified.
10. **Section 4.4.4 Analytical Quality Assurance Considerations** – Discrepancies were identified between the text in this section and QAPP Worksheet #20.
 - a. **Field Equipment Blanks** – The text identifies “field equipment blank” and “field equipment duplicate”. Please clarify the description and resolve the discrepancy with QAPP Worksheet #20 which states the frequency is TBD.
 - b. **Field Equipment Blanks** – The text identifies that one equipment blank will be generated for each location sampled for low-level mercury. This analysis is not included in QAPP Worksheet #20.
 - c. **Trip Blanks** – Trip blanks are listed in the text but not in QAPP Worksheet #20.
 - d. **Field Blanks** – The text identifies that one field blank will be generated for every 10 primary samples. QAPP Worksheet #20 identifies the frequency as TBD.
11. **Section 5 Field Physical Measurements** – The text includes a description of how staff gauges will be surveyed; however, there is no description of how or where the staff gauge will be installed.
12. **Section 6 Management of Investigation-Derived Waste** – It appears that investigation derived waste from the Plainwell Mill Site is proposed to be disposed of at the 12th Street Landfill. Are there plans to dispose of wastes from other locations at the 12th Street Landfill? Is this allowed under the CD?

Please do not hesitate to me at the below-listed number if you have any questions regarding this letter or require any clarification of the comments listed above.

Sincerely,

Michael Berkoff
Remedial Project Manager
U.S EPA, Superfund Division
(312) 353-8983

cc via email: S. Borries, U.S. EPA
J. Saric, U.S. EPA
S. Chummar, U.S. EPA
L. Schmidt, U.S. EPA
M. Mankowski, U.S. EPA
E. Furey, U.S. EPA
J. Haile, Weyerhauser
K. Krawczyk, MDEQ



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF: SR-6J

VIA ELECTRONIC MAIL AND USPS

Friday, August 1, 2007

Jennifer Hale
Environment Health & Safety, WTC 2G2
P.O. Box 9777
Federal Way, WA 98063-9777

Dear Ms. Hale,

The United States Environmental Protection Agency Region 5 (Region 5) has reviewed Weyerhaeuser's proposal (see letter from Weyerhaeuser to Region 5 dated May 14, 2007) to conduct an emergency action to "prevent, abate, or minimize" a potential release of Waste Material from the banks of the 12th Street Landfill, in accordance with Paragraph 67 of the *Consent Decree for the Design and Implementation of Certain Response Actions at Operable Unit #4 and the Plainwell Inc. Mill Property of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (CD)*, Docket No. 1:05CV003.

Region 5 understands that Weyerhaeuser has determined a release of Waste Material from the banks of the 12th Street Landfill is likely as a result of the planned partial dismantling of the Plainwell Dam and the likeliness that additional dams downstream will also be dismantled. Based on Weyerhaeuser's determination, Region 5 authorizes Weyerhaeuser to conduct activities to "prevent, abate, or minimize" the potential release of Waste Material from the banks of the 12th Street Landfill under paragraph 67 of the CD.

Region 5 expects the design concept, data needs, data quality objectives, and scope of work for the activities will be submitted for our review in the near future. Should you have any questions in regards to the tasks, please do not hesitate to contact me at the information below or 312.886.1434.

Sincerely,

Michael Berkoff, Remedial Project Manager
U.S. EPA Region 5
Superfund Division – Remedial Response Branch #1
77 W Jackson Blvd. (SR-6J)
Chicago, IL 60604

cc: E. Furey, U.S. EPA - C-14J
J. Saric, U.S. EPA - SR-6J
S. Chummar, U.S. EPA - SR-6J
K. Krawczyk, MDEQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3590

Reply to the Attention Of: SR-6J

August 3, 2007

Via E-mail and Hard Copy

Jennifer Hale
Environment Health & Safety, WTC 2G2
P.O. Box 9777
Federal Way, WA 98063-9777

RE: Work Plan and Field Sampling Plan
12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04
Plainwell, Michigan

Dear Mr. Hutchens:

The U.S. EPA has reviewed RMT's response to comments on the Work Plan and the Field Sampling Plan for *12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04, Plainwell, Michigan*, dated June, 2007 (WP, FSP). U.S. EPA gives conditional approval to the FSP and the WP based upon the comments in the August 2, 2007 response letter. These comments must be incorporated into the Design Report and as applicable, into all other documents that are generated as a part of the emergency action. U.S. EPA has concerns about the capacity at the 12th street landfill. This has been expressed to RMT via phone conversations and in the July 31, 2007 WP/FSP comment letter. In your response to that letter, you state that detailed capacity estimates for the landfill can be made available to U.S. EPA. Include these estimates in a revised Design Report and in all other pertinent design documents.

Please do not hesitate to me at the below-listed number if you have any questions regarding this letter or require any clarification of the comments listed above.

Sincerely,

Michael Berkoff
Remedial Project Manager
U.S EPA, Superfund Division
(312) 353-8983

cc via email: S. Borries, U.S. EPA
J. Saric, U.S. EPA
S. Chummar, U.S. EPA
L. Schmidt, U.S. EPA
M. Mankowski, U.S. EPA
E. Furey, U.S. EPA
J. Hutchens, RMT
P. Bucholtz, MDEQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3590

Reply to the Attention Of: SR-6J

August 15, 2007

Via E-mail and Hard Copy

Jennifer Hale
Environment Health & Safety, WTC 2G2
P.O. Box 9777
Federal Way, WA 98063-9777

RE: Emergency Response Plan Design Report
12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04
Plainwell, Michigan

Dear Ms. Hale:

The U.S. EPA has reviewed RMT's Emergency Response Plan Design Report (ERPDR) for *12th Street Landfill, Kalamazoo River Superfund Site Operable Unit #04, Plainwell, Michigan*, dated June, 2007 (WP, FSP). U.S. EPA gives conditional approval to the ERPDR so long as RMT, on behalf of Weyerhaeuser, addresses the comments that are included in this letter. The responses to these comments should be incorporated into the final ERPDR and as applicable, into all other documents that are generated as a part of the emergency action.

1. **Section 2.2.2 Haul Road/Work Platform** - Having trucks back up a significant distance from the top of the landfill down the access road adjacent to the former powerhouse channel seems to be slow and potentially hazardous. It may be more practical to extend the temporary haul road to the south between Areas 1 and 2 and create a loop back to the road along the former powerhouse channel.
2. **Section 2.2.3 Residuals Containment Area** - What is the type and thickness of the existing landfill cover material? Will the removal of 2 to 3 feet of existing landfill cover material expose waste?
3. **Section 2.2.3 Residuals Containment Area** - What is the water source for decontamination and dust control?
4. **Section 2.2.3 Residuals Containment Area** - What is the cover material for Area 1 after disposal activities are completed?

5. **Section 2.2.3 Residuals Containment Area** – The text states that excavated residuals will typically contain approximately 20 to 25 percent water by volume. This percentage appears to be low. Please provide the basis for this percentage.
6. **Section 2.2.4 Soil Relocation Area** - Area 2 is labeled as “mixed fill/paper residuals placement area” on Figure 3, but placement of paper residuals is not described in the text. Are paper residuals also intended to be removed from the eastern slope?
7. **Section 2.2.5 On-Site Wastewater Treatment** – It should be clarified that the 250-gallon effluent holding tank stores “treated” rather than “clean” water.
8. **Section 2.4.1 Grading of Eastern Slope of Landfill** – What is the basis for the design of the clay plug and the buffer zone to prevent a hydraulic connection between the waste and the river?
9. **Section 3.1 Resuspension Monitoring and Control** - The YSI multiparameter probes will be used to monitor turbidity and will log the values at one hour intervals. How often will someone download the data to see if turbidities are elevated in the downstream direction?
10. **Section 3.1 Resuspension Monitoring and Control** - The text states that three of these units will be used in the monitoring efforts, but does not say how these three units will be distributed between upstream and downstream.
11. **Section 3.1 Resuspension Monitoring and Control** - Surface water samples will be collected on a weekly basis and analyzed for PCBs by an offsite lab. What turnaround time will be used to allow some ability to react if elevated concentrations are seen?
12. **Section 3.2 Wastewater Treatment System Discharge Monitoring** – The text states that the effluent sampling point is “downstream of the holding tank.” This should be clarified to state “downstream of the effluent holding tank.”
13. **Section 3.2 Wastewater Treatment System Discharge Monitoring** – How often will the turbidity of the sedimentation tank effluent be monitored to compare it to background readings in the river?
14. **Section 3.2 Wastewater Treatment System Discharge Monitoring** – Appendix G is the CQAP, not the FSP as stated in the last paragraph in this section.
15. **Section 3.3 Residuals Excavation Documentation Sampling** – Please provide some clarification on the residuals excavation sampling.
 - a. The text identifies that samples from the six nodes randomly selected for sampling will be inspected for residuals. Will the visual inspection for residuals be performed in each node, or only in the six nodes which are sampled?
 - b. The text states “If residuals are observed in the samples, then additional sediment (targeting a initial 6-inch depth) will be excavated”. Over what area will the additional excavation be performed?
16. **Figure 4** – The figure identifies a layer that would be comprised of residuals and soils. The figure label identifies this as a potential layer. In either the text of the document or as a note with in the figure, please identify the source for this potential layer.
17. **Figure 7** - According to the schedule, it appears the reshaping of the landfill bank will be done after the paper residuals are excavated. It may be beneficial to conduct these activities

concurrently if dry soil from the landfill bank is needed to mix with the paper residuals for dewatering/drying.

As per a discussion between U.S. EPA and RMT that occurred today, U.S. EPA expects to receive a letter from RMT that provides a detailed estimate of the capacity at the 12th street landfill. This should be presented by RMT to U.S. EPA in a document separate from any response that RMT or Weyerhaeuser may have to this letter. Please do not hesitate to me at the below-listed number if you have any questions regarding this letter or require any clarification of the comments listed above.

Sincerely,

Michael Berkoff
Remedial Project Manager
U.S EPA, Superfund Division
(312) 353-8983

cc via email: S. Borries, U.S. EPA
J. Saric, U.S. EPA
S. Chummar, U.S. EPA
L. Schmidt, U.S. EPA
M. Mankowski, U.S. EPA
E. Furey, U.S. EPA
J. Hutchens, RMT
P. Bucholtz, MDEQ

Appendix B

Photographic Log

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 1	Date 3/07/2007		
Description Plainwell Dam looking downstream at former powerhouse channel			

Photo No. 2	Date 3/07/2007	
Description From Plainwell Dam looking at bank of 12 th Street Landfill		

Photographic Log





Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 3	Date 3/07/2007		
Description View from 12 th St. Landfill looking East			

Photo No. 4	Date 3/07/2007	
Description Top of 12 th St. Landfill looking west		

Photographic Log

Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 5	Date 3/07/2007		
Description View from 12 th St. Landfill bank looking towards Plainwell Dam			
Photo No. 6	Date 3/07/2007		
Description 12 th St. Landfill looking from peninsula on Plainwell Dam			

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 7	Date 3/07/2007		
Description USEPA investigative derived waste drums from the Plainwell Mill property			

Photo No. 8	Date 5/22/2007	
Description Powerhouse Channel looking downstream		

Photographic Log


Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 9	Date 8/07/2007		
Description Powerhouse channel looking towards 12 th Street Landfill			

Photo No. 10	Date 8/08/2007	
Description Top of landfill after initial clearing		

Photographic Log


Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 11	Date 8/08/2007		
Description Top of 12 th Street landfill after initial clearing.			

Photo No. 12	Date 8/08/2007	
Description Begin construction of containment pad top of 12 th St. Landfill		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 13	Date 8/08/2007		
Description Construction of containment Pad top of landfill			

Photo No. 14	Date 8/16/2007	
Description Upstream sampling point between dam and power channel outlet		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 15	Date 8/17/2007		
Description Reshaping of bank along shoreline			

Photo No. 16	Date 8/17/2007	
Description Reshaping of bank along shoreline		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 17	Date 8/17/2007		
Description East bank of landfill reshaped for access			

Photo No. 18	Date 8/21/2007	
Description Begin setting Portadam© downstream end of channel		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 19	Date 8/22/2007		
Description Portadam frame installation upstream end of channel			

Photo No. 20	Date 8/23/2007	
Description Lay out fabric for Portadam		

Photographic Log


Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 21	Date 9/04/2007		
Description <p>Barrier seen in place on port-a-dam skeleton prior to be "rolled down"</p> <p>Placement of fabric delayed due to high flow rates in River</p>			

Photo No. 22	Date 9/05/2007	
Description <p>Fabric laid out upstream side of Portadam frame</p>		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 23	Date 9/05/2007		
Description Completed Portadam – upstream side of channel			

Photo No. 24	Date 9/6/2007	
Description Concrete manhole to use as sump in channel		

Photographic Log






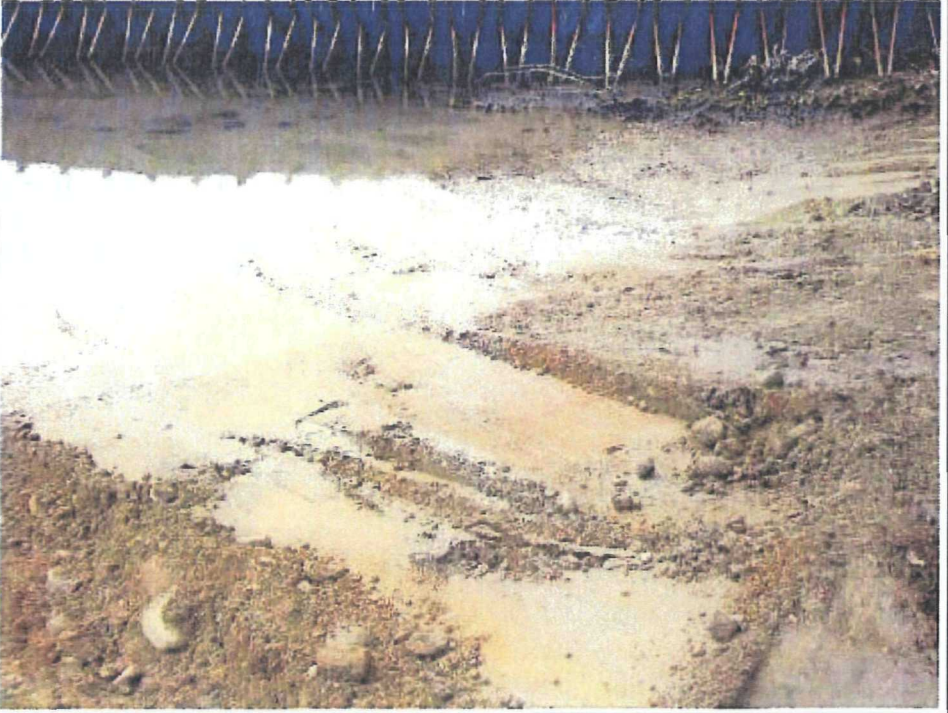
Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 25	Date 9/07/2007		
Description View of pump within concrete sump			

Photo No. 26	Date 9/07/2007	
Description Discharge diffuser from pumping down channel with secondary containment with silt curtains		

Photographic Log

Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 27	Date 9/7/2007		
Description View of contained area after significant pumping has occurred.			
Photo No. 28	Date 9/07/2007		
Description Begin excavating material from channel			

Photographic Log

Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 29	Date 9/08/2007		
Description View of channel after excavation			
Photo No. 30	Date 9/9/2007		
Description View of bank after excavation			

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 31	Date 9/10/2007		
Description Containment/dewatering pad on top of landfill			

Photo No. 32	Date 9/9/2007	
Description Water treatment holding tank and carbon system		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 33	Date 9/19/2007		
Description Excavation of clay plug trench			

Photo No. 34	Date 9/25/2007	
Description Trench installed along top of landfill to minimize any runoff down slope.		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 35	Date 9/27/2007		
Description Preparing east face to 5:1 slope			

Photo No. 36	Date 10/9/2007	
Description Placing stone within key trench at base of bank shoreline over geotextile fabric		

Photographic Log


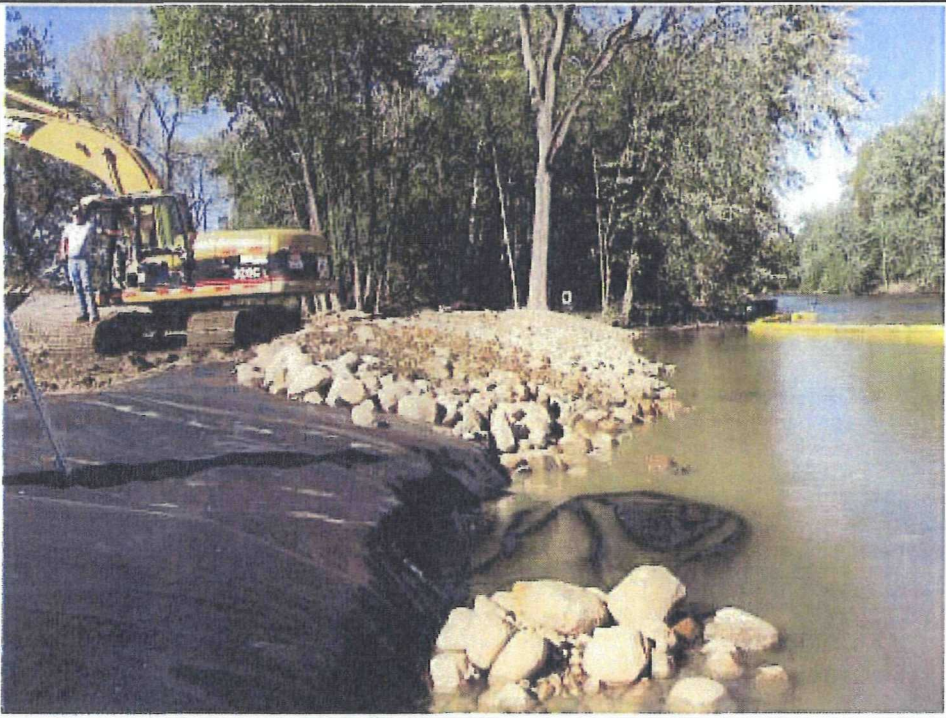
Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 37	Date 10/9/2007		
Description Closeup of stone prior to placement along shoreline			

Photo No. 38	Date 10/9/2007	
Description Placement of stone over geotextile		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 39	Date 10/10/2007		
Description Shoreline after stone placement looking south			

Photo No. 40	Date 10/22/2007	
Description Prepare area for placement of Enkamat material		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 41	Date 10/23/2007		
Description Placement of Enkamat along slope			

Photo No. 42	Date 10/25/2007	
Description Enkamat after hydroseeding		

Photographic Log



Client Name: Weyerhaeuser		Site Location: Plainwell, Michigan	Project No.: 00-05131.03
Photo No. 43	Date 4/8/2008		
Description East face of landfill with vegetative growth – silt fence placed at top of bank			

Photo No. 44	Date 4/10/2008	
Description View of shoreline looking south after initial opening of flow through former powerhouse channel		

Appendix C

Construction Field Log

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
Date	Description of work in progress	Field problems	Subcontractor on site	Regulatory agency on site
8/6/2007	Walked site, discussed overall plans and potential problem areas. Walked site with Integrity Tree Service for proposal. Lay out areas for sediment pad.	Monitoring wells – check to see if they can be removed/abandoned.	Integrity Tree Service	None
8/7/2007	Begin preparation of pad for sediment placement – grey residual material located within 1 foot of surface at various locations – majority of soils appear to be brown silty sand mixed with the residual material. Based on existing land surface – pad size decreased to approximately 100 x 200. Actual corners will be surveyed in next week.	Monitoring wells – need to remain in place if possible – will be marked and work around. Grey residual material does appear to soften as equipment is rolled over it. Will have to monitor as sediment and soil material is placed on top.	None	None
8/8/2007	Finish pad for sediment placement. Walk site with Integrity to identify trees to be removed. Clear brush on top of landfill. Cut trees along top of landfill – stack trees which will be moved to chipper when it arrives.	None	Integrity Tree Service	None
8/9/2007	Assist Integrity Tree Service with removal of trees from bank. Left stumps in place on bank for erosion protection.	None	Integrity Tree Service	None
8/10/2007	Due to previous commitments, Integrity Tree Service could not mobilize chipper rig and semi truck/trailer till 12 PM. Stand by till 12 PM. Chipper rig arrives and begins chipping operations. Blew hydraulic hose on chipper, took operator to Grand Rapids for repair parts. Continued chipping till 7:30 PM to complete operations. Demobilized for weekend off, pending arrival of turbidity curtain.	None	Integrity Tree Service	None
8/13/2007	Began removing excess soils/paper waste from North end of slope on river bank, pushing removed soils to the west, rough grading. Began rough survey of removal area to plan additional removal. Holland Engineering on site to set bench marks for construction, also located sediment area for future reference.	D-6 R LGP developed hydraulic leak, called CAT, they sent mechanic, machine repaired, back in operation.	Holland Engineering	None
8/14/2007	Continued removing excess soils/paper waste from North end of slope on river bank, pushing removed soils to the west, rough grading.	D-6 R LGP developed hydraulic leak, called CAT, they sent mechanic, machine repaired, back in operation.	None	None
8/15/2007	Continued removing excess soils/paper waste from North end of slope on river bank, pushing removed soils to the west, rough grading. Excavated two areas and placed accumulated tree stumps in excavations, then backfilled. Placed turbidity curtain along river edge to prevent erosion/sediment problems during bank clearing activities. Cleared bank of remaining tree stumps and vegetation.	None	None	None
8/16/2007	Continued removing excess soils/paper waste from North end of slope on river bank, pushing removed soils to the west, rough grading. Surveyed, laid out and completed "Bench" along the river bank. Built bench to el. 702.5.	None	None	None
8/17/2007	Finished removing excess soils/paper waste from North end of slope on river bank, pushing removed soils to the west, rough grading. Continued to lay out 5:1 slope, and dozing materials to upper side of landfill.	None	None	None

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
Date	Description of work in progress	Field problems	Subcontractor on site	Regulatory agency on site
8/20/2007	Unloaded all materials from semi-trailer shipped from PortaDam. Due to weather (rain) had to unload semi truck at the entrance to the site and stockpile the frames and fabric. Once truck unloaded and left, began to transport the materials to the work area next to the Kalamazoo River. Began assembling frames and installing the frames into the river at the specified locations. Filling sand bags for future use.	Site very wet from rains over the weekend. Unable to unload semi at the designated area.	Catskill-2 laborers PortaDam-3 divers/workers	None
8/21/2007	Completed installation of the frame structures in the north end of the river. Installed 202 linear feet of frame structures in the last day and a half. Laborers bolt two frame sections together and rig out in the river to the divers. Divers align and set the structures as they get them. Filling sand bags for future use.	Site began drying in the afternoon after some sun and wind.	Catskill-2 laborers PortaDam-3 divers/workers	None
8/22/2007	Completed installation of the frame structures in the south end of the river. Installed 160 linear feet of frame structures today. Moved PortaDam fabric to "bench area", preparing to deploy after putting together. Filling sand bags for future use. Shoveled tracks on 330 Excavator. Removed trees and vegetation from high side of the site for future roadway.	Severe thunderstorm in the AM, heavy lightning. Could not begin work till 8:30 AM. Due to the recent heavy rains, PortaDam divers concerned about the increase in volume/velocity of the river at this time. During the initial survey, water velocity/volume at 4.8 cf/s As of Monday velocity/volume up to 7.19 cf/s. Today increased to 9.2 cf/s. Per PortaDam personnel, will not deploy fabric until velocity/volume drops to 7.0 cf/s, due to potential damage/loss of fabric material in the current now.	Catskill-2 laborers PortaDam-3 divers/workers	USEPA, BB&L
8/23/2007	Put fabric sections together for installation. Seams were rigged and clipped into place and sections rolled for deployment. Due to the increased velocity/flow in the river, RMT had PortaDam personnel move the alignment of the framework back ten (10) feet to allow for deployment of the fabric, scheduled for Friday. Filling sand bags for future use. Moved Manhole base into position for placement when required. Moved roll-off box into position for placement when required.	As noted yesterday, increased river flow due to recent heavy rains has resulted in inability to deploy the fabric required for the PortaDam. Spoke with superintendent of PortaDam (Tim). After conversations with Tim, Jim Hutchens, and Dave Pratt, decision was made to move the northern framework section back from the increased flow area to allow for the deployment of the fabric. Information was gathered from the operators of the upstream dam and the flow prediction from the operators there indicated that the flow was not expected to drop until wed/Thur of next week, based on the rainfall pattern to date and weather forecasts.	Catskill-2 laborers PortaDam-3 divers/workers	None

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
<u>Date</u>	<u>Description of work in progress</u>	<u>Field problems</u>	<u>Subcontractor on site</u>	<u>Regulatory agency on site</u>
8/24/2007	Finished rolling and preparing fabric for deployment. Unloaded Godwin pump and equipment. Demobilized dive crew. Demobilized laborers for weekend.	Severe thunderstorms last night again, city of Plainwell without power, river up dramatically. Flows up. Again, heavy rains overnight, severe thunderstorms predicted for later today. PortaDam dive crew checked all their equipment and fabric, repaired damage from last night storms. PortaDam dive crews then checked water conditions. After the heavy rains last night, water flow up to 1000 cfs. Water flow through the river has increased and now is right up against the previously moved framework. Dive crew unable to deploy fabric to complete the dam. Spoke with several people at PortaDam and due to the recent discovery of the flow predictions from USGS, PortaDam is demobilizing till September 4 to allow for the river to stabilize. Spoke with both Jim Hutchens, Jeff Macri regarding the plan and both agreed, cannot deploy fabric, cheaper to demobilize dive crew.	Catskill-2 laborers PortaDam-3 divers/workers	None
8/27/2007	Shoveled tracks on D-6 dozer and 330 Excavator. Fueled all equipment prior to shipment. Loaded and unloaded dozers and excavators. Removed topsoil/mud from roadway, prepared for gravel delivery on Tuesday. Confirmed delivery of recycled concrete for Tuesday.	Checked water flow data from USGS site, levels peaked on Saturday at over 1,300 cfs. Today's reading was 980 cfs at 11:30 AM.	Catskill-2 laborers	CH2M Hill
8/28/2007	Rigged Godwin pump, pipe, hoses to river edge. Connected pump to power pack, ran some hose. Received recycled concrete, built access road to site. Completed filling sandbags for PortaDam fabric installation. Cleaned site of accumulated debris	None	Catskill-2 laborers	CH2M Hill
8/29/2007	Graded top of fill for future truck access. Delivered clay sample from R. Smith Trucking to PSI Testing for Proctor, classification, and hydrometer.	None	None	CH2M Hill
8/30/2007	Graded top of fill for future truck access.	None	None	None
8/31/2007	Graded top of fill for future truck access. Fueled equipment. Confirmed divers for next week. Confirmed Baker tank for next week. Demobilized for Labor Day weekend.	None	None	None
9/4/2007	Completed "backdragging" top of fill for truck access for Frac Tank, water treatment system. Set Roll-off box in river, tied for safety. Set double set of turbidity curtains around roll off box. Confirmed Baker tank for Thursday. Confirmed divers arrival for Wed. AM.	Received call from PSI (soil testing lab), appears we may have difficulty with the sample delivered last Thursday. Too much sand in sample to achieve the specified 10 -7 permeability.	Catskill-2 laborers	None

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
Date	Description of work in progress	Field problems	Subcontractor on site	Regulatory agency on site
9/5/2007	Rigged rolled fabric for PortaDam into river, both north and south sides. Hung PortaDam fabric onto frames, both north and south sides. Dropped fabric on the north leg of the dam, stretched into place. Placed continuous line of sand bags along chain edge of portadam fabric, for sealing to the bottom. Received another sample from R Smith and Sons trucking. (Sample R Smith 2) delivered to PSI Labs for testing. Due to excessive sand content in the original sample, had PSI discontinue testing on that sample and start on sample #2.		Catskill-2 laborers PortaDam-2 divers/workers	None
9/6/2007	Unrolled south side of PortaDam fabric. Placed sandbags on leading edge of south side fabric. Placed concrete manhole base into river, placed pump into manhole base. Ran pipe to roll-off box staged in river for energy dissipater, began water pumping. Continuous pumping throughout the night. Re-rigged turbidity curtain for more effective reduction of sediment.	First section of discharge hose from the pump was defective, missing one ear for locking in place. Replacement hose delivered from Chicago.	Catskill-2 laborers PortaDam-2 divers/workers	None
9/7/2007	Moved Concrete manhole base, Deepened to remove more water. Pumped water down to workable level. Began removing sediments from the river, Stacking on the bank to allow for some dewatering. Re-rigged installed turbidity curtain. Leveled roll-off box in the river to allow for more energy dispersion. Continuous pumping overnight.	Had some difficulty maintaining proper turbidity readings within the two sections of the turbidity curtain, due to the volume of water needing to be pumped. Leveled the roll-off box, re-rigged the silt curtain to alleviate the problems.	Catskill-2 laborers	CH2M Hill
9/8/2007	Continued pumping water when clear, digging when water low. Re-Rigged installed turbidity curtains, added one section to make three levels of curtain. Re-rigged installed turbidity curtain. Placed 55 gallon drum over the end of the discharge pipe in the energy dissipater to alleviate the water flowing over the end, uncontrolled. With the addition of the drum, water "cascading" nicely over the upstream portion of the energy dissipater. Continuous pumping overnight. Leveled out the hauled sediment material in the dewatering area. Lowered the concrete manhole again to allow for more efficient dewatering. Drained and cleaned energy dissipater of sediments when working on the pipeline.	Had some difficulty maintaining proper turbidity readings within the two sections of the turbidity curtain, due to the volume of water needing to be pumped. Added an additional section of turbidity curtain to help with the reduction of turbidity. Leveled the roll-off box, re-rigged the silt curtain to alleviate the problems. Added 55 gallon drum over the end of the pipe as described above. Appears to have corrected the problems.	Catskill-2 laborers	CH2M Hill
9/9/2007	Continued pumping water when clear, digging when water low. Re-hung submersible pump. Discharge pressure fluctuating/low. Removed pump from manhole, found two fish (northern pike) in the suction screen, along with some weeds/debris. Re-installed pump, continued pumping. Cleaned bank and rough graded, hauled material to drying bed. Completed river digging operations. Awaiting samples and results. Continuous pumping overnight. Leveled out the hauled sediment material in the dewatering area. Cleaned slope of spilled materials after digging completed.	Pump discharge pressures began fluctuating and water level not dropping as usual. Removed pump, cleaned debris, replaced, continued pumping.	Catskill-2 laborers	CH2M Hill

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
Date	Description of work in progress	Field problems	Subcontractor on site	Regulatory agency on site
9/10/2007	Continued pumping water to keep water level within the PortaDam below the level of the river. Pumping approximately 500-600 GPM to maintain the water level. Replaced 8" Hydarulic pump, damaged seal.	Seal on the pump head appears to have failed. Replaced pump head. Had to have pump brought in from Chicago, IL. Pump arrived on site at 5:15, switched out pumps.	Catskill-2 laborers	CH2M Hill
9/11/2007	Continued pumping water to keep water level within the PortaDam below the level of the river. Pumping approximately 500-600 GPM to maintain the water level. Repaired Hydraulic Pump. Cleaned minor oil spill from river	Due to yesterdays pump failure, noticed small oil spill in the river (inside curtains) and a small amount outside the curtains. Phoned James Hutchens, provided the information regarding the spill, placed sorbent pads and booms in the affected area, allowed the oil to collect in the pads and removed the pads from the water. MDEQ on site during the cleanup operations. Oil spilled in the river is "Environmental Oil", which is biodegradable.	Catskill-2 laborers	Weston Solutions (MDEQ Representative)
9/12/2007	Continued pumping water to keep water level within the PortaDam below the level of the river. Pumping approximately 500-600 GPM to maintain the water level. Water level will need to be maintained until receipt of sample results, expected mid-day on Thursday. Manning the pump 24 hours/day. Received more of the clay sample and delivered to PSI Labs to complete testing for a Standard Proctor.	None	Catskill-1 laborer	Weston Solutions (MDEQ Representative)
9/13/2007	Continued pumping water to keep water level within the PortaDam below the level of the river. Pumping approximately 500-600 GPM to maintain the water level. Received sample results at 2 PM local time, required to re-dig and re-sample. Pumped water down to allow for more effective digging. Commenced digging and hauling material in the affected areas. Completed digging and removed the pump from the manhole while water was low enough to reach the pump. Collected samples. Discontinued night shift.	None	None	CH2M Hill
9/14/2007	Demobilized from site for weekend off	None	None	None
9/17/2007	Pratt/Nickerson mobilized back to Michigan from Indiana on Sunday. PortaDam divers mobilized back to site on Sunday. Began removal of the south dam structure from the river-completed. Began removal of the north dam structure from the river-completed. Folded and prepped fabric for transportation. Ordered geofabric for delivery.	None	Catskill-2 laborers PortaDam-3 divers/workers	None
9/18/2007	Began stacking and banding PortaDam frames for transport. Moving banded frames to load out area. Folded and tied PortaDam fabric and staged for transport. Removed sand bags used in PoratDam installation from the river. Rough graded bench area for excavation activities.	None	Catskill-2 laborers PortaDam-3 divers/workers	None

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
Date	Description of work in progress	Field problems	Subcontractor on site	Regulatory agency on site
9/19/2007	Began removing residual materials from the north berm area, placing in sediment area. Began excavating "clay plug" area. Excavating to elevation 699.7 to ensure proper thickness of the clay plug. Deployed turbidity curtain along the bank the entire length of the site.	None	Catskill-2 laborers	Weston Solutions and MDEQ
9/20/2007	<input type="checkbox"/> Continued excavating "Clay Plug" area to elevation 699.7. <input type="checkbox"/> Removed residual wastes from south area around berm.	None	Catskill-2 laborers	Weston Solutions and MDEQ
9/21/2007	Completed excavating "Clay Plug" area to elevation 699.7. Had surveyors locate/verify depth of clay plug area previously excavated. Loaded Godwin pump and accessories. Demobilized for weekend.	None	Catskill-2 laborers Holland Engineering-Two (2) surveyors	CH2M Hill
9/24/2007	Shaped 5:1 slope due to location of clay plug. Loaded semi of PortaDam Frames. Unloaded semi load of PortaDam frames, trucker refused load. Placed general fill over the residual waste material on 5:1 slope area.	After loading a partial load on semi for PortaDam, trucker did not have enough chains for load, would not purchase additional chains. After several calls and waiting, trucker refused the load, unloaded frames and sent trucker away.	Catskill-1 laborer	None
9/25/2007	Placed berm on the upper side of the 5:1 slope to minimize any erosion, rain expected tonight. Removed gray residual waste from the bottom of the "clay plug" area. Working on obtaining another source of clay material from Autumn Hills. Called D-730 truck off rent, to pick up 9/26. Ordered roller for clay compaction to be delivered 9/26.	Spoke to PSI Labs for indication of the results of the permeability testing being performed. At this time, the sample provided from R Smith and Sons Trucking MAY not meet the 10-7 permeability requirement. Due to the possibility of the sample not passing, locating an additional source of clay for use from Autumn Hills Landfill. Used this clay on previous projects and know the proctors and permeability results. Waiting on word from landfill manager to schedule trucking. Due to the weather forecast (rain overnight) clay at the landfill site may not be available till the site dries.	Catskill-1 laborer	None
9/26/2007	Loaded D-730 Off Road Truck. Unloaded CAT 433 Roller.	Due to heavy rains overnight, site too wet to work. Site needs to dry to minimize damage.	Catskill-1 laborer	None
9/27/2007	Prepped site for clay delivery on 9/28. Scheduled clay for delivery on 9/28. Scheduled soil testing for 9/28/07. Site still too wet for clay delivery till 9/28.	Site still too wet for clay delivery.	None	None
9/28/2007				

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
<u>Date</u>	<u>Description of work in progress</u>	<u>Field problems</u>	<u>Subcontractor on site</u>	<u>Regulatory agency on site</u>
9/29/2007	Tested lift #1 in the clay plug area. Took three density tests, all passed at 100% compaction. Placed second lift in the clay plug area and compacted as required. Tested lift #2, took three density tests, all tests passed at 100% compaction. Set additional grade stakes, surveyed elevation, set grades and placed third lift in the clay plug. Compacted third lift as required and performed density testing. Tested third lift, three locations, 100%. Set additional stakes for top of bank, rough grading river slope at 3:1 slope. Pulled two (2) shelly tube samples of the compacted clay. Took samples to 2.0' depth.	None	PSI Labs	CH2M Hill
9/30/2007				
10/1/2007	Checked site, still raining in the AM, site too wet to work.	Checked site, still raining in the AM, site too wet to work.	Catskill-1 laborer	None
10/2/2007	Checked site, still raining in the AM, site too wet to work.	Checked site, still raining in the AM, site too wet to work.	Catskill-1 laborer	None
10/3/2007				
10/4/2007	Set laser to 20% grade on 5:1 slope. Began removing soils from the slope to achieve the 5:1 grade required. Pushed removed soil to the top of the landfill. Graded to make room for rock trucks scheduled for Monday.	None	Catskill-1 laborer	None
10/5/2007	Set laser to 20% grade on 5:1 slope. Continued removing soils from the slope to achieve the 5:1 grade required. Pushed removed soil to the top of the landfill. Graded to make room for rock trucks scheduled for Monday.	Tried to remove "key way" at the bottom of the 3:1 slope in the river. Too much material to stack in place on the bank to remove later. Have loader scheduled for Monday for rock placement. Will use loader to remove the material from the bank on Monday.	Catskill-1 laborer	None
10/8/2007	Began and completed installing "key" trench at 3:1 slope end for placement of additional rip rap. Additional rip rap to prevent scouring of the bank when current changes. Piling rip rap at top of 5:1 slope for use on 3:1 slope. Graded lower work area for anticipated rains this PM/tomorrow as forecasted. Layed out anchor trench for geofabric installation on Tuesday.	None	Catskill-1 laborer	None
10/9/2007	Excavated 2' Anchor trench for geofabric installation. Placed geofabric along 3:1 slope into bottom and top keys. Backfilled upper anchor trench to hold geofabric in place. Placed rip rap stone over geofabric and into bottom key. Graded site for potential rain.	None	Catskill-2 laborers	None
10/10/2007	Continued placing rip rap onto geofabric on 3:1 slope. Graded site for potential rain.	None	None	None
10/11/2007	Site too wet to work. Went over to mill site, walked site, checked for clearing limits, excavation procedures.	Site too wet to work	None	None
10/12/2007	Removed trees from North side of the bank area. Removed roll-off box from river. Graded area as good as feasible for drainage	None	Catskill-1 laborer	None

Weyerhaeuser Inc.				
12th Street Landfill Emergency Action				
<u>Date</u>	<u>Description of work in progress</u>	<u>Field problems</u>	<u>Subcontractor on site</u>	<u>Regulatory agency on site</u>
10/15/2007	No work at site. Heavy Rains on Sunday PM, unable to get trucks into the site to deliver topsoil. Called CAT 930 Loader off rent.	Site too wet to work	Catskill-1 laborer	None
10/16/2007	No work at site. Heavy Rains in AM, light rain in PM. Loaded CAT 930 Loader for transport.	No work at site. Heavy Rains in AM, light rain in PM.	None	None
10/17/2007	No work at site. Site too wet for work.	No work at site. Site too wet for work.	None	None
11/1/2007	Continued hauling in grading fill to cover exposed waste material. Continued placing 6" of cover over the remainder of the site. Three (3) semi trains running all day, pushing grading fill over the site with D-4 dozer.	None	Catskill-1 Operator	None
11/2/2007	Continued hauling in grading fill to cover exposed waste material. Continued placing 6" of cover over the remainder of the site. Three (3) semi trains running all day, pushing grading fill over the site with D-4 dozer. Loaded all Porta Dam frames, fabric and parts.	None	Catskill-1 Operator	None
11/5/2007	Checked site from weekend, all secure. Cleaned tracks on dozer and excavator. Called all equipment off rent. No additional work at site. Project completed.	None	Catskill-1 Operator	None



Appendix D

Clay Plug Testing Results

REPORT OF FIELD COMPACTION TESTS
(NUCLEAR METHOD)

TESTED FOR: DAVE PRATT
RMT, INC.
2025 EAST BELTLINE AVENUE SE
SUITE 402
GRAND RAPIDS, MI 49546

PROJECT: 12TH STREET LANDFILL PROJECT
OTSEGO, MICHIGAN

DATE: September 29, 2007
REVISION #1
PSI REPORT NO.: 413-70082-3
PAGE 1 OF 2

TEST DATA: (1) Brown SILTY CLAY (Lean CLAY CL) OPT. MOIST. = 20.0%

TEST NO.	TEST MODE/DEPTH	ELEVATION	SOIL ID NUMBER	MAXIMUM LAB DRY UNIT WEIGHT *	WATER CONTENT	WET UNIT WEIGHT	DRY UNIT WEIGHT	PERCENT COMPACTION	COMMENTS* Spec. 98% Min
1	12"	F.G.-18"	1	104.0	16.4	128.5	110.4	106.2	1 - A
2	12"	F.G.-18"	1	104.0	14.6	125.7	109.7	105.5	1 - A
3	12"	F.G.-18"	1	104.0	13.9	124.2	109.0	104.8	1 - A
4	12"	F.G.-6"	1	104.0	15.6	124.6	107.8	103.7	1 - A
5	12"	F.G.-6"	1	104.0	15.1	124.7	108.3	104.1	1 - A
6	12"	F.G.-6"	1	104.0	15.5	127.1	110.0	105.8	1 - A

TEST LOCATION: Clay cap

1	50 feet south from north end of clay plug
2	150 feet north from south end of clay plug
3	50 feet north from south end of clay plug
4	25 feet south from north end of clay plug
5	100 feet south from north end of clay plug
6	75 feet north from south end of clay plug

NOTES: TESTS PERFORMED PER ASTM D2922 & ASTM D3017
UNIT WEIGHTS SHOWN: Lbs. per cubic foot (pcf)
WATER CONTENT: Percent of dry weight
PERCENT COMPACTION: Based on maximum dry unit weight obtained on sample indicated by soil ID number.

* COMMENTS: 1. FILL MATERIAL
2. BACKFILL
3. BASE COURSE
4. SUBBASE
5. SOIL CEMENT
6. OTHER

A. TEST RESULTS COMPLY WITH SPECIFICATIONS
B. PERCENT COMPACTION DOES NOT COMPLY WITH SPECIFICATIONS
C. RETEST OF PREVIOUS TEST
D. MOISTURE IN EXCESS OF SPECIFICATIONS
E. MOISTURE BELOW SPECIFICATIONS

* (1) ASTM D698 METHOD A

TEST INSTRUMENT: Troxler, 3430, #27442

REMARKS: PSI did not monitor the material placement.

STANDARD COUNT M: 670 D: 2494

ADJUSTMENT DATA M: D:

Respectfully submitted,
Professional Service Industries, Inc.

REPORT OF FIELD COMPACTION TESTS
(NUCLEAR METHOD)

TESTED FOR: DAVE PRATT
RMT, INC.
2025 EAST BELTLINE AVENUE SE
SUITE 402
GRAND RAPIDS, MI 49546

PROJECT: 12TH STREET LANDFILL PROJECT
OTSEGO, MICHIGAN

DATE: September 29, 2007

REVISION #1
PSI REPORT NO.: 413-70082-3

PAGE 2 OF 2

TEST DATA: (1) Brown SILTY CLAY (Lean CLAY CL) OPT. MOIST. = 20.0%

TEST NO.	TEST MODE/DEPTH	ELEVATION	SOIL ID NUMBER	MAXIMUM LAB DRY UNIT WEIGHT *	WATER CONTENT	WET UNIT WEIGHT	DRY UNIT WEIGHT	PERCENT COMPACTION	COMMENTS: Spec. 98% Min
7	12"	F.G.	1	104.0	15.1	126.4	109.8	105.6	1 - A
8	12"	F.G.	1	104.0	15.5	127.2	110.1	105.9	1 - A
9	12"	F.G.	1	104.0	15.3	126.7	109.9	105.7	1 - A

TEST LOCATION: Clay cap

7	40 feet north from south end of clay plug
8	130 feet north from south end of clay plug
9	15 feet south from north end of clay plug

NOTES: TESTS PERFORMED PER ASTM D2922 & ASTM D3017
UNIT WEIGHTS SHOWN: Lbs. per cubic foot (pcf)
WATER CONTENT: Percent of dry weight
PERCENT COMPACTION: Based on maximum dry unit weight obtained on sample indicated by soil ID number.

*COMMENTS: 1. FILL MATERIAL
2. BACKFILL
3. BASE COURSE
4. SUBBASE
5. SOIL CEMENT
6. OTHER

A. TEST RESULTS COMPLY WITH SPECIFICATIONS
B. PERCENT COMPACTION DOES NOT COMPLY WITH SPECIFICATIONS
C. RETEST OF PREVIOUS TEST
D. MOISTURE IN EXCESS OF SPECIFICATIONS
E. MOISTURE BELOW SPECIFICATIONS

* (1) ASTM D698 METHOD A

TEST INSTRUMENT: Troxler, 3430, #27442

REMARKS: PSI did not monitor the material placement.

STANDARD COUNT M: 670 D: 2494

ADJUSTMENT DATA M: D:

Respectfully submitted,
Professional Service Industries, Inc.

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

TESTED FOR: DAVE PRATT
RMT, INC.
2025 EAST BELTLINE AVENUE SE
SUITE 402
GRAND RAPIDS, MI 49546

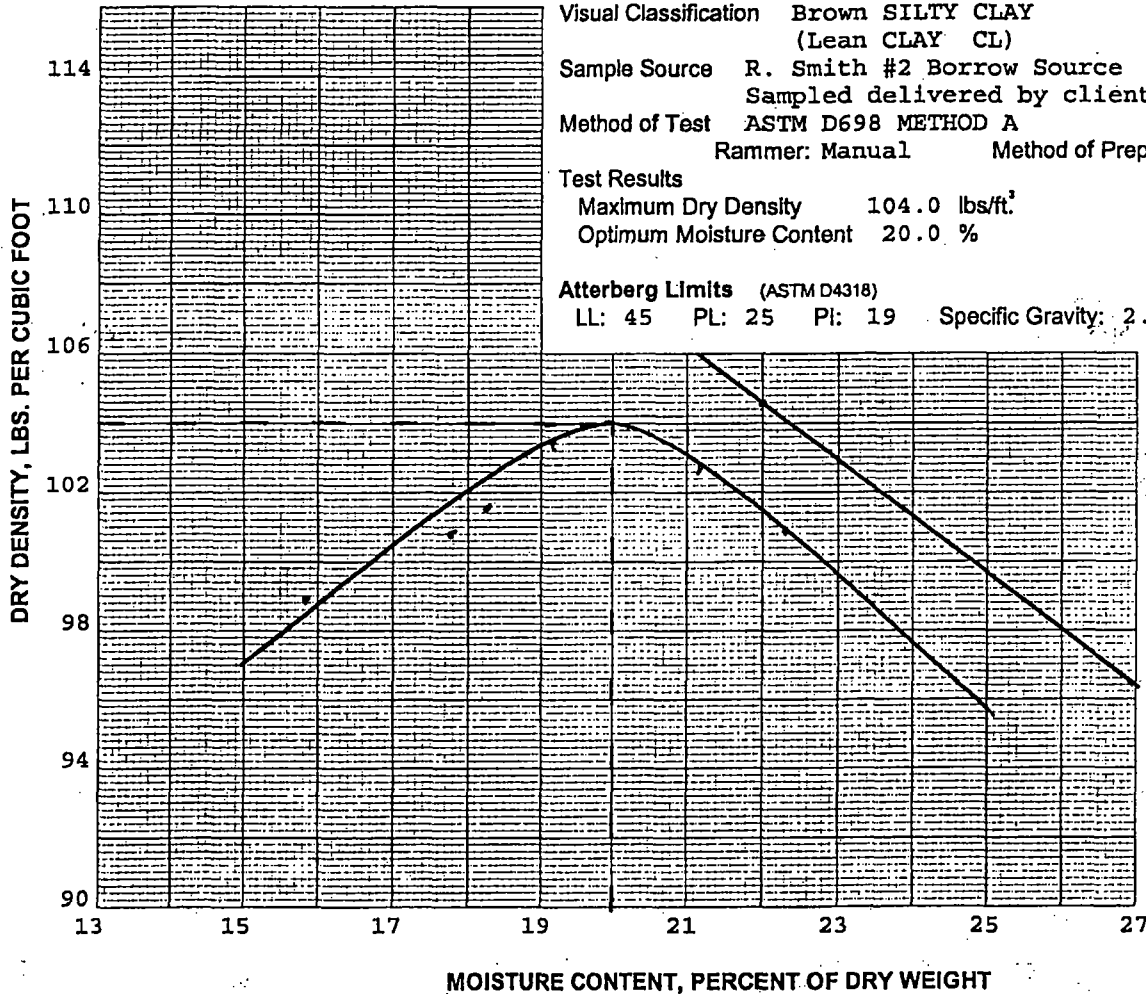
PROJECT: 12TH STREET LANDFILL PROJECT
OTSEGO, MICHIGAN

DATE: September 19, 2007

REVISION #1
PSI REPORT NO.: 413-70082-1

TEST DATA

Visual Classification Brown SILTY CLAY
(Lean CLAY CL)
Sample Source R. Smith #2 Borrow Source
Sampled delivered by client to PSI
Method of Test ASTM D698 METHOD A
Rammer: Manual Method of Preparation: Moist
Test Results
Maximum Dry Density 104.0 lbs/ft.³
Optimum Moisture Content 20.0 %
Atterberg Limits (ASTM D4318)
LL: 45 PL: 25 PI: 19 Specific Gravity: 2.65 (estimate)

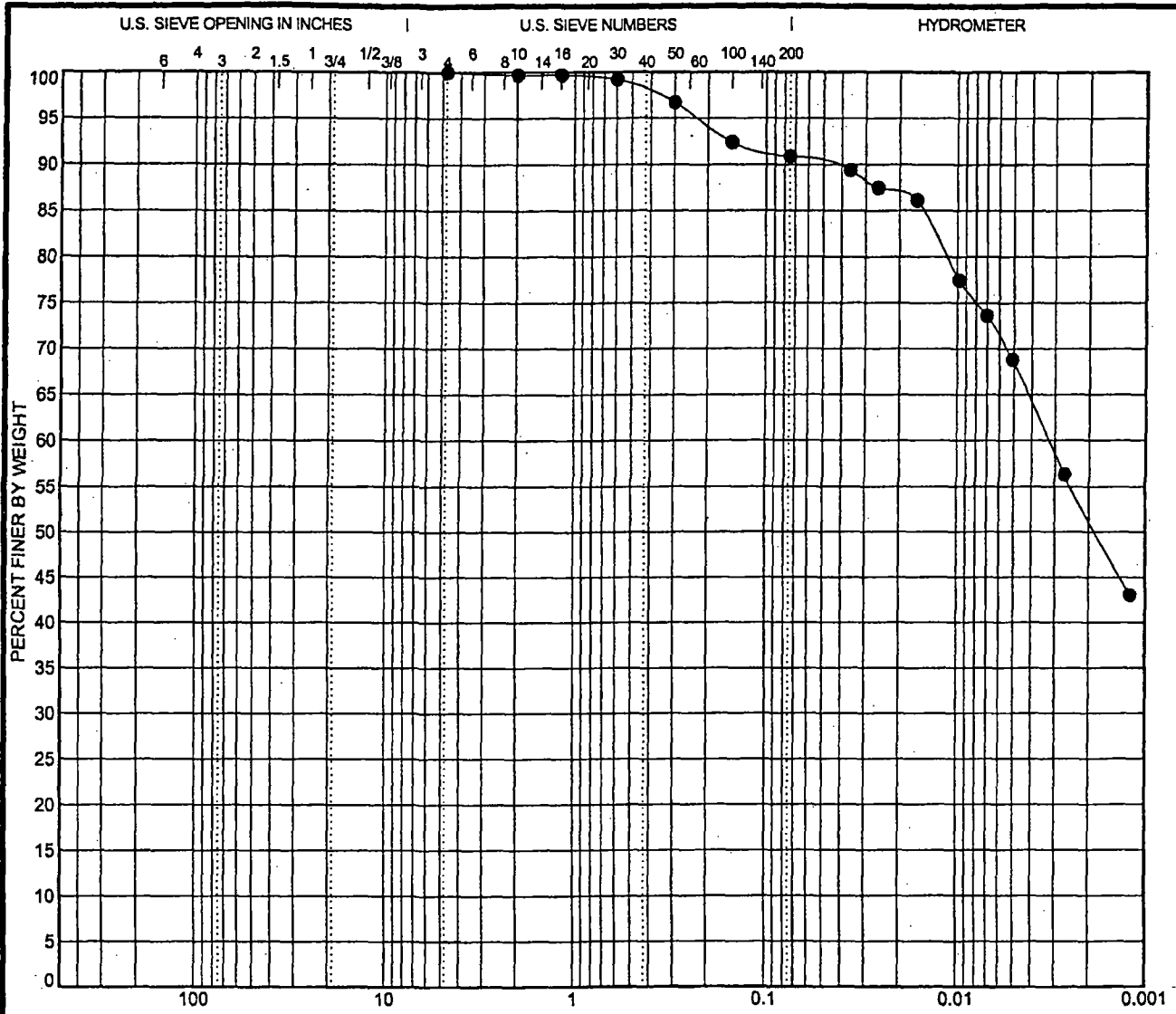


Grain Size Analysis (ASTM C136 and/or C117)	
Sieve Size	Percent Passing
No. 4	100
No. 8	99.8
No. 10	99.7
No. 16	99.6
No. 30	99.2
No. 50	96.7
No. 100	92.4
No. 200	90.9

REMARKS:

Respectfully submitted,
Professional Service Industries, Inc.

REPORTS MAY NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT WRITTEN PERMISSION BY PROFESSIONAL SERVICE INDUSTRIES, INC.



Project Name: 12th Street Landfill Project - Otsego, Michigan Project No: 413-70082-6
Client's Sample No. NA Date: 10/10/2007
Visual Description: Brown Silty Clay Depth: N/A

Permeant: ☒ De-aired tap water ☐ 0.01 N CaSO₄

Sample Preparation:

Permeability Test
ASTM D5084

☐ Material was adjusted to required moisture content and remolded at the required density.

☒ Other: Shelby Tube, pressed at project site on 09-29-07.

Soil Properties:

Before Saturation			After Saturation		
Initial Moisture Content (%)	Initial Wet Density (pcf)	Initial Dry Density (pcf)	Final Moisture Content (%)	Final Wet Density (pcf)	Final Dry Density (pcf)
18.21	128.06	108.33	21.65	132.17	108.65

Formula:

$$K = \frac{aL}{2At} \left(\ln \frac{P_B + h(t_1)}{P_B + h(t_2)} \right) \cdot R_T$$

K = Corrected Coefficient of Permeability (cm/sec)

a = Cross-sectional area of burette (cm²) = 0.906

L = Length of sample (cm) = 7.882

A = Cross-sectional area of sample (cm²) = 40.4215186

t = Elapsed time (sec)

$$h(t_1) = \frac{V_U(t_1) - V_L(t_1)}{a}$$

$$h(t_2) = \frac{V_U(t_2) - V_L(t_2)}{a}$$

R_T = Correction factor for viscosity of water at various temperatures

P_B = Bias Pressure (cm) = 140.74
psi x 70.37 cm/psi

Degree of Saturation:

Date	Time	Cell Pressure (psi)	Head Pressure (psi)	Back Pressure (psi)	Confining Pressure Increase (psi) = a	Pore Pressure Increase (psi) = b	Skempton's Parameter (B) = (b/a)
10/8/2006	9:00 AM	25.0	20.0	20.0	5.0	5.0	1.0

Permeability Measurement:

Test No.	Date	t (sec)	Upper Volume Reading (V _U)	Lower Volume Reading (V _L)	h(t ₁)	h(t ₂)	Water Temp. T (°C)	R _T (from table)	K (cm/sec)	K _{corrected} (cm/sec)
1	10/8/2007	32,400	24.00	1.00	25.39		18	1.051	4.94E-08	5.19E-08
			22.60	2.30		22.41	18	1.051		
2	10/9/2007	50,400	22.60	2.30	22.41		18	1.051	5.66E-08	5.95E-08
			20.10	4.50		17.22	18	1.051		

AVERAGE CORRECTED COEFFICIENT OF PERMEABILITY (K): 5.57E-08 cm/sec

Tested By: GA

Date: 10/10/2007



Appendix E

Release Report Documentation

NATIONAL RESPONSE CENTER 1-800-424-8802

*** For Public Use ***

Information released to a third party shall comply with any applicable federal and/or state Freedom of Information and Privacy Laws

Incident Report # 848512

INCIDENT DESCRIPTION

*Report taken at 14:50 on 11-SEP-07

Incident Type: FIXED

Incident Cause: EQUIPMENT FAILURE

Affected Area: KALAMAZOO RIVER

The incident was discovered on 11-SEP-07 at 07:00 local time.

Affected Medium: WATER / KALAMAZOO RIVER

SUSPECTED RESPONSIBLE PARTY

Organization: RMT INC.
BROOKFIELD, WI 53045

Type of Organization: PRIVATE ENTERPRISE

INCIDENT LOCATION

County: ALLEGAN
City: PLAINWELL State: MI
Distance from City: .5 MILES
Direction from City:
Latitude: 42 Degrees 27' 25" N

Longitude: 85 Degrees 40' 10" W
Township: OTSEGO FORMER POWERHOUSE CHANNEL KALAMAZOO RIVER ADJACENT TO THE 12TH ST. LANDFILL

RELEASED MATERIAL(S)

CHRIS Code: OHY Official Material Name: HYDRAULIC OIL
Also Known As: HYDRAULIC OIL (ENVIROLOGIC 146 BIODEGRADABLE)
Qty Released: 3 GALLON(S) Qty in Water: 3 GALLON(S)

DESCRIPTION OF INCIDENT

/////WEB REPORT///// USING HYDRAULIC PUMP TO REMOVE WATER FOR A US EPA SUPERFUND EMERGENCY ACTION SITE. A SEAL ON THE HYDRAULIC PUMP, MALFUNCTIONED ALLOWING APPROXIMATELY 2-3 GALLONS OF ENVIRONMENTAL TYPE HYDRAULIC FLUID TO LEAK WITHIN AN AREA CONSISTING OF A DOUBLE FLOATING SILT CURTAIN. BOOMS WERE SET OUT TO CONTAIN THE MATERIAL.

INCIDENT DETAILS

Package: NO
Building ID:
Type of Fixed Object: CONSTRUCTION SITE
Power Generating Facility: NO
Generating Capacity:
Type of Fuel:
NPDES:

NPDES Compliance: YES
---SHEEN INFORMATION---
Sheen Color: UNKNOWN
Sheen Odor Description:
Sheen Travel Direction:
Sheen Size Length:
Sheen Size Width:

---WATER INFORMATION---
Body of Water: KALAMAZOO RIVER
Tributary of: UNKNOWN
Nearest River Mile Marker:
Water Supply Contaminated: NO

DAMAGES

Fire Involved: NO Fire Extinguished: UNKNOWN
INJURIES: NO Hospitalized: Empl/Crew: Passenger:
FATALITIES: NO Empl/Crew: Passenger: Occupant:
EVACUATIONS: NO Who Evacuated: Radius/Area:

Damages: NO

<u>Closure Type</u>	<u>Description of Closure</u>	<u>Length of Closure</u>	<u>Direction of Closure</u>
Air:	N		
Road:	N		M Ar
Waterway:	N		
Track:	N		

Passengers Transferred: NO
Environmental Impact: NO
Media Interest: NONE Community Impact due to Material:

REMEDIAL ACTIONS

LAY OUT ABSORBENT BOOMS AND COLLECT VISUAL MATERIAL. REPLACE SEAL ON PUMP.
Release Secured: YES
Release Rate:
Estimated Release Duration: 20 MINUTE

WEATHER

Weather: CLEAR, 65°F

ADDITIONAL AGENCIES NOTIFIED

Federal: US EPA
State/Local: MDEQ
State/Local On Scene: MDEQ
State Agency Number: NO REPORT #

NOTIFICATIONS BY NRC

ATLANTIC STRIKE TEAM (MAIN OFFICE)

11-SEP-07 15:00
USCG HSOC AT DHS (USCG HSOC DESK)
11-SEP-07 15:00
DOT CRISIS MANAGEMENT CENTER (MAIN OFFICE)
11-SEP-07 15:00
U.S. EPA V (MAIN OFFICE)
11-SEP-07 15:02
MICHIGAN DEPT OF COMMUNITY HEALTH (HSEES)
11-SEP-07 15:00
NATIONAL INFRASTRUCTURE COORD CTR (MAIN OFFICE)
11-SEP-07 15:00
NOAA RPTS FOR MI (MAIN OFFICE)
11-SEP-07 15:00
SECTOR LAKE MICHIGAN (MSD GRAND HAVEN)
11-SEP-07 15:00
MICHIGAN DEQ ATTN: THOR STRONG (MAIN OFFICE)
11-SEP-07 15:00
SURFACE TRANS SECURITY INSPECT PROG (COMMAND CENTER)
11-SEP-07 15:00
USCG DISTRICT 9 (COMMAND CENTER)
11-SEP-07 15:00
WEB REPORT (WEB REPORT SUBMITTER)
11-SEP-07 15:01

ADDITIONAL INFORMATION

THIS REPORT WAS TAKEN FROM A WEB REPORT.

*** END INCIDENT REPORT # 848512 ***



Material Safety Data Sheet

EnviroLogic® 146 Biodegradable Hydraulic Fluid

Section 1 Chemical Product and Company Information

Terresolve Technologies Ltd.
35585 Curtis Blvd.
Eastlake, Ohio 44095
Phone: 440-951-8633
Fax: 440-951-4341

PRODUCT TRADE NAME:	EnviroLogic® 146
CAS NO:	Not applicable for mixtures.
SYNONYMS:	None.
GENERIC/CHEMICAL NAME:	Mixture.
PRODUCT TYPE:	Biodegradable Hydraulic Fluid
PREPARATION/REVISION DATE:	09/01/04
TRANSPORTATION EMERGENCY PH NO:	1-800-661-3558

Section 2 Composition/Information On Ingredients

NAME	CAS#	%wt.
This material has no known hazards under applicable laws.		

Section 3 Hazards Identification

PRINCIPAL HAZARDS: This material has no known hazards.

See Section 11 for complete health hazard information.

Section 4 First Aid Measures

ORAL:	DO NOT INDUCE VOMITING. If conscious, give 2 glasses of water. Get immediate medical attention.
EYE:	Flush with water at least 15 minutes. Get medical attention if eye irritation develops or persists.
SKIN:	Wash with soap and water. Get medical attention if irritation develops. Launder contaminated clothing before reuse.
INHALATION:	Remove exposed person to fresh air if adverse effects are observed.
ADDITIONAL:	Note to physician: Treat symptomatically.

Section 5 Firefighting Measures

FLASH POINT (Typical):	>400 °F (Typical) (COC)
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UPPER FLAMMABLE LIMIT:	Not Determined.
LOWER FLAMMABLE LIMIT:	Not Determined.
EXTINGUISHING MEDIA:	CO2, dry chemical, or foam. Water can be used to cool and protect exposed material.
SPECIAL FIREFIGHTING PROCEDURES:	Recommend wearing self-contained breathing apparatus. Water may cause splattering. Material will float on water.
UNUSUAL FIRE & EXPLOSION HAZARDS:	Toxic fumes, gases or vapors may evolve on burning.
AUTOIGNITION TEMPERATURE:	Not Determined.
EXPLOSION DATA:	Material does not have explosive properties.

Section 6 Accidental Release Measures

Spill Procedures:	Personal Protective Equipment must be worn, see Personal Protection Section for PPE recommendations. Ventilate area if spilled in confined space or other poorly ventilated areas. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material. Check under Transportation and Labeling (DOT/CERCLA) and Other Regulatory Information Section (SARA) for hazardous substances to determine regulatory reporting requirements for spills.
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Section 7 Handling and Storage

Handling Procedures:	Keep containers closed when not in use. Wash thoroughly after handling. Empty container contains product residue which may exhibit hazards of product.
Storage Procedures:	No special storage precautions required.

Section 8 Exposure Controls/Personal Protection

Ventilation Procedure:	Use with adequate ventilation.
Gloves Protection:	Use nitrile or neoprene gloves.
Eye Protection:	Safety Glasses.
Respiratory Protection:	Under normal use conditions, respirator is not usually required. Use NIOSH/MSHA approved disposable dust/mist mask if the recommended exposure limit is exceeded.
Clothing Recommendation:	Long sleeve shirt is recommended.

Section 9 Physical And Chemical Properties

VAPOR PRESSURE:	Not Determined.
PH:	Not Determined.
SPECIFIC GRAVITY:	0.92 at 15.6 Deg C
WATER SOLUBILITY:	Insoluble.
PERCENT VOLATILE:	Unknown.
VAPOR DENSITY:	Not Determined.
EVAPORATION RATE:	Not Determined.
ODOR:	Mild
APPEARANCE:	Golden liquid
VISCOSITY:	46 Centistokes at 40 Deg C (Typical)
ODOR THRESHOLD:	Unknown.
BOILING POINT :	Not Determined.
FREEZING POINT:	Not Determined.
MOLECULAR WEIGHT:	Not Determined

Section 10 Stability And Reactivity

STABILITY:	Material is normally stable at moderately elevated temperatures and pressures.
INCOMPATIBILITY:	Oxidizing agents.
POLYMERIZATION:	Will not occur.
THERMAL DECOMPOSITION:	Smoke, carbon monoxide, aldehydes and other products of incomplete combustion.

Section 11 Toxicological Information

ORAL TOXICITY:	The LD50 in rats is > 5000 mg/kg. Based on data from components or similar materials.
EYE IRRITATION:	Not expected to cause eye irritation. Based on data from components or similar materials.
SKIN IRRITATION:	Not expected to be a primary skin irritant. Based on data from components or similar materials. Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, defatting and cracking of the skin.
DERMAL TOXICITY:	The LD50 in rabbits is > 2000 mg/Kg. Based on data from components or similar materials.

INHALATION TOXICITY:	No data available to indicate product or components may be a toxic inhalation hazard.
RESPIRATORY IRRITATION:	If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract similar to that observed with mineral oil. Based on data from components or similar materials. Under good industrial hygiene practices where all exposure limits are observed, respiratory irritation should not be a problem.
DERMAL SENSITIZATION:	No data available to indicate product or components may be a skin sensitizer.
INHALATION SENSITIZATION:	No data available to indicate product or components may be respiratory sensitizers.
CHRONIC TOXICITY:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
CARCINOGENICITY:	No data available to indicate any components present at greater than 0.1% may present a carcinogenic hazard.
MUTAGENICITY:	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
REPRODUCTIVE TOXICITY:	No data available to indicate either product or components present at greater than 0.1% that may cause reproductive toxicity.
TERATOGENICITY:	No data available to indicate product or any components contained at greater than 0.1% may cause birth defects.
OTHER:	No other health hazards known.
EXPOSURE LIMITS:	EXPOSURE LIMITS: Contains natural ester base oil. Under conditions which may generate mists, observe the OSHA PEL of 5 mg per cubic meter, ACGIH STEL of 10 mg per cubic meter.

Section	12	Ecological Information
FRESHWATER FISH TOXICITY:	Fathead minnow, 96h LC50, ppm EPA Test Method 797.1400	>10,000
FRESHWATER INVERTEBRATES TOXICITY:	Daphnia magna, 48h, EC50, ppm EPA Test Method 797.1300	>10,000
ALGAE TOXICITY:	Algae EC50, ppm EPA Test Method 797.1050	100 – 1000
BACTERIA TOXICITY:	Sludge respiration inhibition, EC50, ppm	>10,000
ENVIRONMENTAL FATE:	Product shows a biodegradability of >60% as measured by OECD 301B (Mod. Sturm) test procedure.	

**Section 13 Disposal Considerations**

WASTE DISPOSAL: Material, if discarded, is not expected to be a characteristic hazardous waste under RCRA. Waste management should be in compliance with federal, state, and local laws.

Section 14 Transport Information

U.S.DOT BULK SHIPPING DESCRIPTION: Not applicable

U.S.DOT NON-BULK SHIPPING DESCRIPTION: Not applicable

IMDG SHIPPING DESCRIPTION: Not applicable.

ICAO SHIPPING DESCRIPTION: Not applicable.

ADR/RID HAZARD CLASS: Not applicable.

Section 15 Regulatory Information

U.S. TSCA INVENTORY: All components of this material are on the US TSCA Inventory.

SARA EXT. HAZ. SUBST.: This product does not contain greater than 1.0% of any chemical substance on the SARA Extremely Hazardous Substances list.

SARA SECTION 313: This product does not contain greater than 1.0% (greater than 0.1% for carcinogenic substance) of any chemical substances listed under SARA Section 313.

CERCLA HAZARDOUS SUBSTANCES: None known.

CAL. PROP. 65: This product does not contain chemical(s) known to the state of California to cause cancer and/or birth defects based on maximum impurity levels of components.

U.S. FUEL REGISTRATION: Not applicable.

U.S. DEPT. OF AGRICULTURE: This product has not been filed with the USDA to support H2 approvals.

EEC EINECS: All components are in compliance with the EC Seventh amendment Directive 92 /32/EEC.

JAPAN MITI: All components are in compliance with the Chemical Substances Control Law of Japan.

AUSTRALIA: All components are in compliance with chemical notification requirements in Australia.

CANADA: All components are in compliance with the Canadian Environmental Protection Act.

**EnviroLogic® 146 Hydraulic Oil****Material Safety Data Sheet**

Section		16	Other Information	
NFPA CODE:		Health: 1	Fire: 1	Reactivity: 0
HMIS CODE:		Health: 1	Fire: 1	Reactivity: 0
PRECAUTIONARY LABELS:		This material has no known hazards.		

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of the knowledge of Terresolve Technologies Ltd.; however, Terresolve Technologies makes no warranty whatsoever, expressed or implied, of MERCHANTABILITY OR FITNESS FOR THE PARTICULAR PURPOSE, regarding the accuracy of such data or the results to be obtained from the use thereof. Terresolve Technologies assumes no responsibility for injury to recipient or to third persons or for any damage to any property and recipient assumes all risks.

Appendix F

Laboratory Analysis

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 07-2240
WA Cert.# C1219

Report
Kalamazoo River RMT Sediment and Water
Method: EPA 8082

		PDCSD01D0.	PDCSD02D0.	PDCSD03D0.	PDCSD04D0.	PDCSD05D0
Client ID		5070910	5070910	5070910	5070910	5070910
Sample Date		09/10/07	09/10/07	09/10/07	09/10/07	09/10/07
		12:30	13:00	13:30	14:00	14:30
Lab ID		001	002	003	004	005
Analyte	CAS	<u>ug/Kg</u>	<u>ug/Kg</u>	<u>ug/Kg</u>	<u>ug/Kg</u>	<u>ug/Kg</u>
Aroclor-1016	12674-11-2	<340	<230	<160	<10	<120
Aroclor-1221	11104-28-2	<340	<230	<160	<10	<120
Aroclor-1232	11114-16-5	<340	<230	<160	<10	<120
Aroclor-1242	53469-21-9	<340	<230	<160	<10	<120
Aroclor-1248	12672-29-6	2300	2100	600	130	230
Aroclor-1254	11097-69-1	820 P	700	440	130	170
Aroclor-1260	11096-82-5	<340	<230	<160	<10	<120
Surrogate		% Rec	% Rec	% Rec	% Rec	% Rec
Tetrachloroxylene		99%	87%	100%	88%	94%
Decachlorobiphenyl		56%	69%	67%	92%	62%
Date Extracted		09/11/07	09/11/07	09/11/07	09/11/07	09/11/07
Date Analyzed		09/13/07	09/13/07	09/13/07	09/13/07	09/13/07

Approved: Randy Eatherton
Telephone: (253)924-6421

Weyerhaeuser Analytical & Testing Services
 32901 Weyerhaeuser Way South
 Federal Way, WA 98003

Service Request 07-2240
 WA Cert.# C1219

Report
 Kalamazoo River RMT Sediment and Water
 Method: EPA 8082

Client ID Sample Date	PDCSD06D0.				PDCSD07D0.	
	5070910 09/10/07 15:00	Dup 1 09/10/07 0:00	Dup 1 09/10/07 0:00	Dup 2 09/10/07 0:00	5070913 09/13/07 16:00	
Lab ID	006	007	007Dup	008	009	
Analyte	CAS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aroclor-1016	12674-11-2	<160	<160	<180	<130	<97
Aroclor-1221	11104-28-2	<160	<160	<180	<130	<97
Aroclor-1232	1114-16-5	<160	<160	<180	<130	<97
Aroclor-1242	53469-21-9	<160	<160	<180	<130	<97
Aroclor-1248	12672-29-6	840	620	560 P	350	260
Aroclor-1254	11097-69-1	740	510	450	230	110 P
Aroclor-1260	11096-82-5	<160	<160	<180	<130	<97
Surrogate		% Rec	% Rec	% Rec	% Rec	% Rec
Tetrachloroxylene		109%	101%	106%	100%	88%
Decachlorobiphenyl		69%	67%	62%	63%	48%
Date Extracted		09/11/07	09/11/07	09/11/07	09/11/07	09/18/07
Date Analyzed		09/13/07	09/13/07	09/13/07	09/19/07	09/19/07

Approved: Randy Eatherton
 Telephone: (253)924-6421

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 07-2240
WA Cert.# C1219

Report
Kalamazoo River RMT Sediment and Water
Method: EPA 8082

Client ID	PDCSD07D0. PDCSD08D0. PDCSD09D0.			Method	Method
Sample Date	5070913	5070913	5070913	Blank	Blank
	09/13/07	09/13/07	09/13/07		
	16:00	16:15	16:30		
Lab ID	009Dup	010	011	BLANK	BLANK
Analyte	CAS	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aroclor-1016	12674-11-2	<94	<94	<91	<6.7
Aroclor-1221	11104-28-2	<94	<94	<91	<6.7
Aroclor-1232	1114-16-5	<94	<94	<91	<6.7
Aroclor-1242	53469-21-9	<94	<94	<91	<6.7
Aroclor-1248	12672-29-6	330	170	400	<6.7
Aroclor-1254	11097-69-1	150	96	180	<6.7
Aroclor-1260	11096-82-5	<94	<94	<91	<6.7
Surrogate	% Rec	% Rec	% Rec	% Rec	% Rec
Tetrachloroxylene	97%	84%	95%	117%	111%
Decachlorobiphenyl	50%	56%	50%	101%	88%
Date Extracted	09/18/07	09/18/07	09/18/07	09/11/07	09/17/07
Date Analyzed	09/19/07	09/19/07	09/19/07	09/13/07	09/19/07

Approved: Randy Eatherton
Telephone: (253)924-6421

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 07-2240
WA Cert.# C1219

Report
Kalamazoo River RMT Sediment and Water
Method: EPA 8082

Client ID Sample Date	Lab Control		Lab Control		PDCSD04D0.	PDCSD04D0.
	Spike	Spike	Spike	Spike	5070910 09/10/07 14:00	5070910 09/10/07 14:00
Lab ID	LCS	LCS	004MS	004MSD		
Analyte	CAS	% rec	% rec	% rec	% rec	% rec
Aroclor-1016	12674-11-2	88%	85%	129%	92%	
Aroclor-1221	11104-28-2	NA	NA	NA	NA	
Aroclor-1232	1114-16-5	NA	NA	NA	NA	
Aroclor-1242	53469-21-9	NA	NA	NA	NA	
Aroclor-1248	12672-29-6	NA	NA	NA	NA	
Aroclor-1254	11097-69-1	NA	NA	NA	NA	
Aroclor-1260	11096-82-5	87%	78%	95%	92%	
Surrogate		% Rec	% Rec	% Rec	% Rec	% Rec
Tetrachloroxylene		111%	96%	92%	91%	
Decachlorobiphenyl		104%	83%	88%	91%	
Date Extracted		09/11/07	09/18/07	09/11/07	09/11/07	
Date Analyzed		09/13/07	09/19/07	09/13/07	09/13/07	

Approved: Randy Eatherton
Telephone: (253)924-6421

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 07-2245
WA Cert.# C1219

Report
Kalamazoo River RMT Sediment and Water
Method: EPA 8082

Client ID		PDCSW01-	PDCSW0	PDCSW03-	PDCSW04-	Method	Lab
Sample Date		D2.0U	2-D2.0D	D2.0D	D2.0U	Blank	Control
		09/06/07	09/06/07	09/07/07	09/07/07		Spike
		4:00	4:10	4:00	4:00		
Lab ID		001	002	003	004	BLANK	LCS
Analyte	CAS	ug/L	ug/L	ug/L	ug/L	ug/L	% rec
Aroclor-1016	12674-11-2	<0.20	<0.20	<0.20	<0.20	<0.20	90%
Aroclor-1221	11104-28-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor-1232	11114-16-5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor-1242	53469-21-9	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor-1248	12672-29-6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor-1254	11097-69-1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aroclor-1260	11096-82-5	<0.20	<0.20	<0.20	<0.20	<0.20	89%
Surrogate		% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
Tetrachloroxylene		90%	86%	80%	85%	85%	86%
Decachlorobiphenyl		111%	101%	93%	106%	108%	96%
Date Extracted		09/12/07	09/12/07	09/17/07	09/17/07	09/17/07	09/12/07
Date Analyzed		09/17/07	09/17/07	09/17/07	09/17/07	09/17/07	09/17/07

Approved: Randy Eatherton
Telephone: (253)924-6421

Weyerhaeuser Analysis and Testing Services
32901 Weyerhaeuser Way South
Federal Way, Washington 98003

Service Request 07-2245

Report

Kalamazoo River RMT Sediment and Water

Sample Designation	Date Sampled	Time Sampled	Analytical Lab Code	TSS mg/L
PDCSW01-D2.0U	09/06/07	0400	001	< 10
			001D	< 10
PDCSW02-D2.0D	09/06/07	0410	002	< 4
PDCSW03-D2.0D	09/07/07	0400	003	< 4
PDCSW04-D2.0U	09/07/07	0400	004	< 4

Date Analyzed: 9/12/2007
Method Used: AM E-160.2
Analyst: SH

Approved: Maxine Ranta
Telephone: 253-924-6149

Weyerhaeuser Analytical & Testing Services
 32901 Weyerhaeuser Way South
 Federal Way, WA 98003

Service Request 07-2359
 WA Cert.# C1219

Report
 12th Street PDC
 Method: EPA 8082

Client ID	PDC-SW-5D	PDC-SW-6U	Method	Lab Control	
Sample Date	09/18/07 14:45	09/18/07 15:38	Blank	Spike	
Lab ID	001	002	BLANK	LCS	
Analyte	CAS	ug/L	ug/L	ug/L	% rec
Aroclor-1016	12674-11-2	<0.20	<0.20	<0.20	84%
Aroclor-1221	11104-28-2	<0.20	<0.20	<0.20	NA
Aroclor-1232	11114-16-5	<0.20	<0.20	<0.20	NA
Aroclor-1242	53469-21-9	<0.20	<0.20	<0.20	NA
Aroclor-1248	12672-29-6	<0.20	<0.20	<0.20	NA
Aroclor-1254	11097-69-1	<0.20	<0.20	<0.20	NA
Aroclor-1260	11096-82-5	<0.20	<0.20	<0.20	83%
Surrogate	% Rec	% Rec	% Rec	% Rec	% Rec
Tetrachloroxylene	72%	81%	73%	78%	
Decachlorobiphenyl	96%	99%	98%	103%	
Date Extracted	09/24/07	09/24/07	09/24/07	09/24/07	09/24/07
Date Analyzed	09/26/07	09/26/07	09/26/07	09/26/07	09/26/07

Approved: Randy Eatherton
 Telephone: (253)924-6421